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WALKER'S
MURRAY'S LOGIC
WITH
NOTES &c.

47.1339.





MURRAY'S
WALKER'S LOGIC:

WITH NOTES, &c.

MURRAY'S
COMPENDIUM OF LOGIC:

WITH A CORRECTED LATIN TEXT,

AN ACCURATE TRANSLATION,

AND A FAMILIAR COMMENTARY;

BY JOHN WALKER,

FORMERLY FELLOW OF TRINITY COLLEGE, DUBLIN.

New Edition,

WITH EXPLANATORY NOTES,

FROM THE WORKS OF ARCHBISHOP WHATELY, MILL, GRAY, ETC.

QUESTIONS FOR EXERCISE,

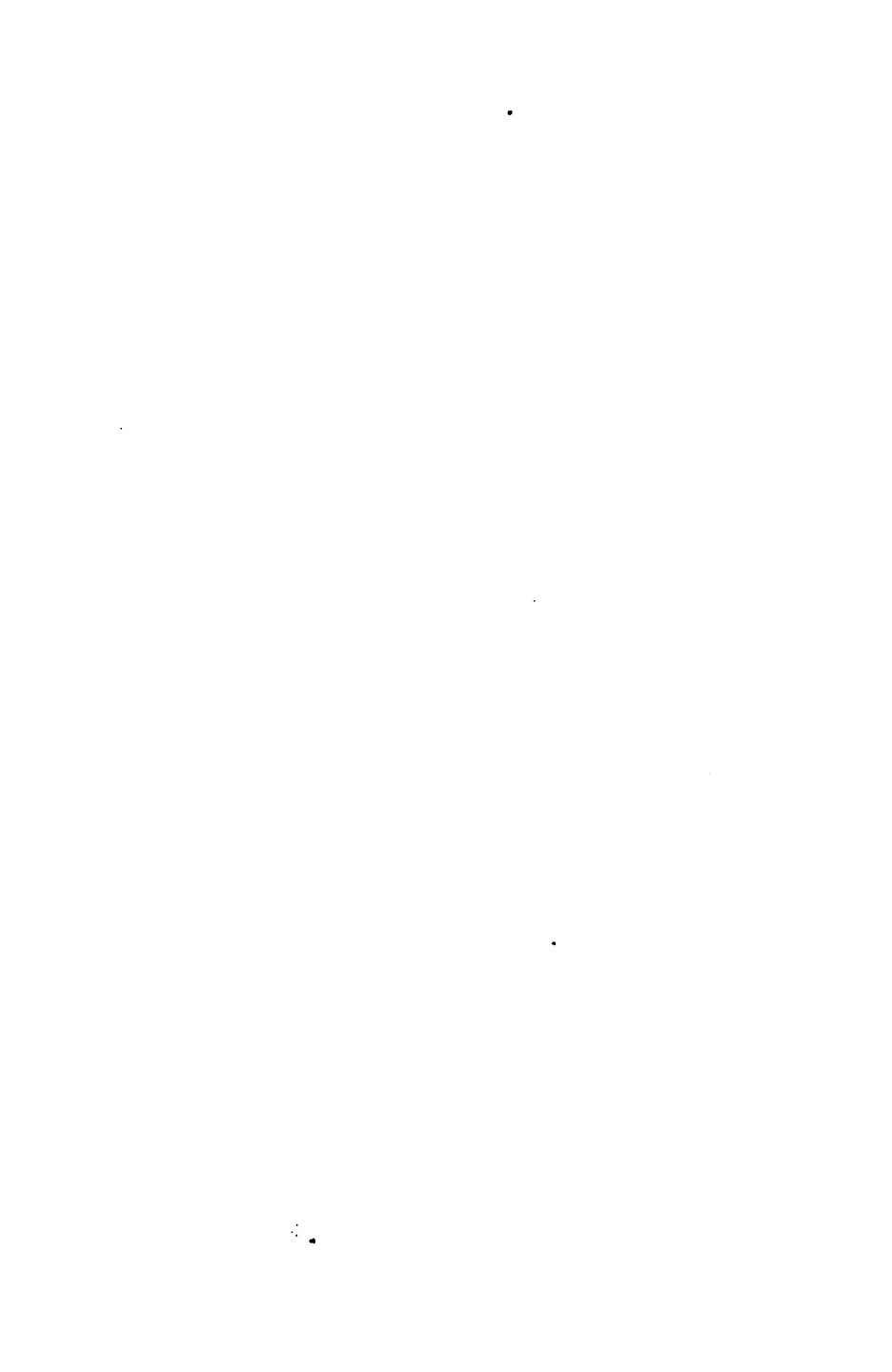
A PRAXIS,

ETC.



LONDON:
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DUBLIN: CUMMING AND FERGUSON.

1847.



PREFACE.

It is the misfortune of some Authors, that they are rather obliged to write what they can, and as they can; than allowed by circumstances to write what they might, and as they would.

It is not indeed with reluctance, that I would employ my pen on the general subject of the following treatise: so convinced am I that it has a close connection with the advancement of sound reasoning; and this, with some of the most important interests of mankind.

But the manner in which I treat the subject, has been determined rather by necessity, than choice. Were I at liberty to pursue it according to the dictates of my own judgment, I certainly should not have taken for the basis of my work that piece, on which I offer a comment. I have briefly described, in the Appendix, the kind of treatise which I would gladly have attempted, if time and other circumstances had permitted me.

Such, however, as it is, I hope this publication will not be unuseful to students in the University; for, though no longer connected with that body, I must continue to feel an interest in its true prosperity.

Some English readers having expressed a wish to possess the original work on which the following Commentary is written, and the former translation of the Compendium being shamefully incorrect, I have inserted an improved translation of it along with the original Latin text.

TRINITY COLLEGE,
DUBLIN.

JOHN WALKER.

PUBLISHERS' ADDRESS

PREFIXED TO THE PRESENT EDITION.

THE System of LOGIC here reprinted, is that originally prepared by the venerable Provost MURRAY, and adopted by the Board for the use of students in the *University of Dublin*. The COMMENTARY is the work of the learned and accomplished JOHN WALKER, formerly a distinguished Fellow of the College.

The *Publishers*, encouraged by the wide circulation which this work enjoys, both in this country, and they are proud to say, in England and the Colonies, have from time to time made additions and improvements, all of which have met with the approbation of the learned, and are judiciously incorporated in the present edition.

Among the writers on the Art of Logic in modern days, ARCHBISHOP WHATELEY stands pre-eminent. Wisely following the system of the master-mind of all antiquity, ARISTOTLE, he has enlarged, simplified, emended, and adorned the old Aristotelian Logic, with Philosophic deductions clear and convincing, and illustrations most happy in their adaptation. The Publishers have been amply indebted to his work, for many of the observations embodied in the *Notes*.

Of the chastely written, and elaborate COMMENTARY of WALKER, the Publishers need not speak ; it has been sanctioned by the Board for several years, and although very many writers have endeavoured to gain a share of public patronage, his work is still *the work* upon the subject, and now enjoys even a greater celebrity than ever.

Yet still the productions of modern writers have been referred to, and many points of importance, both as to the theory itself, and its clearer explanation, have been now given for the *first* time, in the *Notes*.

The advantages which *this Edition* has above its predecessors are simply these :

I. *Accuracy of Typography* ; numerous errors, both in the Latin and English versions, having crept in, during the progress of previous Editions.

II. The *Notes and Questions for Examination*, have been printed *under each section*, and not placed separately as an appendix at the conclusion of the book, where they were inconvenient for reference, or liable to be neglected.

III. Further extracts have been made from Archbishop WHATELEY, and other writers, on many important points.

IV. A PRAXIS, containing a number of examples for testing the Pupils' progress, is appended.

Many writers consider the study of Logic as the proper introduction to a metaphysic, others as intended as a prelude to mathematical pursuits. And accordingly works on Logic have been composed with reference to either of these views ; "but until some system of Logic is produced in our language which is founded upon and grows out of some philosophical system, it is surely better for the student to study a purely formal Logic, independent of any one philosophical system, and yet applicable to all." Such are the sentiments of a celebrated writer, and such have been the views of the *University of Dublin* in their adoption of the present treatise.—Wisely they have placed this as the first study of the Senior Freshman year : not only as a theory useful in itself, but also as an introduction to the Philosophy of the Ancients. And wisely too, notwithstanding the unmeaning cry which was raised against it some years ago, they retained it in the Collegiate course, and have been rewarded by the approbation of all who prefer sound judgment to senseless clamour.

The Publishers trust, that with these additional advantages, the work will enjoy at least the same patronage as its predecessors.

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MURRAY'S COMPENDIUM OF LOGIC:

WITH

WALKER'S COMMENTARY,

Notes and Questions.

INTRODUCTIO.

PHILOSOPHIA est notitia rerum solâ rationis vi acquirenda. Duæ sunt ejus præcipuæ partes; *Physica*, quæ corporum naturam explicat; et *Ethica*, quæ de moribus hominum tractat.

Inter antiquos Græciæ Philosophos de utrâque parte variæ erant opiniones, et inde innumeræ disputationes. Hisce disputationibus mirum in modum delectabantur Græci, qui suas defendendo, et contrarias opiniones oppugnando, summam laudem se consecuturos sperabant.

Quo facilius hæc efficere possent Philosophi, inventa fuit à Zenone Eleate ars Logica seu Dialectica, quam in tres partes divisit. Prima fuit de consequentiis; pars obscura admodum, et inutilis. Secunda, de Colloquio; hac parte usus est Socrates, unde Methodus Socratica disputandi appellatur. Tertia, de Contentione: hinc provenisse videntur pleræque species sophismatum. De methodo Socraticâ, et Sophismatibus plenius infrâ dicetur.

Post Zenonem plerique Philosophi Logicam excoluere, Aristoteles præcipue: ille priorum inventa auxit, plurima ipse invenit; primus præcepta in ordinem redegit, et integræ artis methodum contexit: adeo ut, quanquam ars Logica ante ejus tempora fuerat inchoata, ille tamen pro inventore et authore ejus vulgo habitus est.

Utrum hæcce ars per se revera aliquem præstet usum, quidam dubitavere: quoniam vero in authorum insigniorum scriptis sæpe occurrant termini Logici, hos terminos explicatos habere, ideoque et ipsius artis partes præcipuas, omnino necessarium videtur. Hæc itaque in sequenti compendio efficere est propositum.

INTRODUCTION.

PHILOSOPHY is that knowledge of things, which is attainable by the sole exercise of reason.¹ Its principal parts are two: Physics, which explains the nature of bodies; and Ethics, which treats of human morals.²

About both these parts there were various opinions among the ancient Philosophers of Greece; and thence numberless disputations. Of these disputations the Greeks were passionately fond: and it was an object of their highest ambition to defend their own tenets, and attack the tenets of their opponents.

To assist the Philosophers in this, Zeno, of Elea,³ invented the art of Logic, or Dialectics, which he divided into three parts. The first part, treating of *consequences*, was very obscure and useless: the second, of *conference*, (or *dialogue*), was used by Socrates; whence the name of the Socratic method of argument; the third, of *disputation*; from which appear to have sprung most of the species of Sophisms. Of the Socratic method, and of Sophisms, we shall hereafter speak more.

After Zeno most of the Philosophers cultivated Logic; but Aristotle principally. He extended the inventions of his predecessors, and added many of his own; he first reduced the precepts into order, and methodized the entire art: inso-much that, although it was begun before his time, he has been commonly reckoned the inventor and author of the Art of Logic.⁴

Whether this art be really of any intrinsic use, some have doubted. But since logical terms frequently occur in the writings of eminent authors,⁵ it appears altogether necessary to have these terms explained, and therefore the principal parts of the art itself. To do this is the design of the following Compendium.⁶

COMMENTARY.—INTRODUCTION.

LOGIC is the *Art of Reasoning*. In professing to teach this art, we do not profess to teach all men to reason well upon every subject. Some men, from weakness of natural faculties, are incapable of reasoning well upon any subject; and no man, however powerful his natural faculties, can reason well upon any subject with which he is unacquainted. Logic cannot supply either the want of information, or the want of rational powers.

To illustrate this: a man learns the art of weaving; yet he cannot make a piece of cloth if he has no loom or other instrument belonging to the trade; nor, with ever so many looms, shuttles, &c. can he make a piece of cloth, without the yarn or other materials. In reasoning, the intellectual powers (sagacity, discernment, &c.) may be considered as our *tools* or *instruments*; and the information we possess upon the subject, about which we reason, may be considered as our *materials*. *Nature* must supply the former; *study* must commonly communicate the latter. Logic teaches us to ~~make~~ the best use of our reasoning instruments and materials.

Pursuing the same illustration, we shall see the important usefulness of this art. It has been objected against its use-

fulness, that men of good natural parts contrive to reason well enough upon any subject which they are acquainted with, though they have never learned Logic. Be it so: but does it follow that they would not reason better, if they were expert in this art? A man, with a good natural voice and ear, often sings tolerably well, though he does not understand a note of music. But will any one say, that a scientific knowledge of music is therefore of no use for good singing? Nay; it is well known that such a knowledge of the art would enable one, with a much inferior voice, to sing much better than the other. And in the best performance of the man who has never learned music, the scientific musician will commonly be able to detect violations of musical propriety. An ingenious man, who has never learned the art of weaving, may contrive to make a piece of cloth, which will answer some of the purposes of cloth; but surely he would make a better piece, and with more facility, if he had learned the dexterous management of the shuttle and the loom, by a regular apprenticeship to the business.

I would impress this upon you, my young friend; because I know there is a kind of popular prejudice, current in the University, against the usefulness of Logic: and this prejudice has unfortunately been increased by a passage at the close of the Introduction, in which it is intimated, that a knowledge of this art is of little more use, than to render intelligible the occasional allusions to it, which occur in the Greek and Latin Classics. Now I confess that, if this were the only advantage derived from the study, I should scarcely think it an equivalent for the pains necessary to acquire a knowledge of the art. I confess also, that the degree of information in it, which is acquired at the University, is sometimes of very little practical benefit. But that is only because the students, in those instances, are not led into any real acquaintance with the art. And I can confidently assure you that, as far as you may ever have occasion to exercise your reasoning powers upon any subject, a real acquaintance with the art of Logic will abundantly compensate the labour of acquiring it. Nor have I ever met a person unacquainted with it, who could state and maintain his arguments with facility, clearness, and precision.

To instance only in one of the occasions, to which it may be applied:—I have commonly seen a man, of the acutest

mind, puzzled by the argument of his antagonist; sensible, perhaps, that it was inconclusive, but wholly unable to expose the fallacy which rendered it so: while a Logician, of perhaps very inferior talents, would be able at once to discern and to mark it. It was happily remarked by a late lawyer of eminence, in a letter to his son, that nothing is superior to Logic for *setting a fine edge* on the understanding.

But let me warn you, that you must for a while be content to take my word for the usefulness of Logic; and must not expect immediately to see the application of what you learn. This is the case in learning the *elements* of any art, and renders the study of them dry. You know something of the usefulness of the art of reading; yet, consider that, in learning to read, you were obliged to spell; and in learning to spell, you were obliged to learn the letters of the alphabet; and probably you might have thought this, at the time, very useless trouble; though you now see the use of it in its application to the art of reading, and perceive that you never could have learned to read, if you had not submitted to all the drudgery of these preliminary steps.

Just so, in learning Logic, you must begin, as it were, with the alphabet, and proceed to the spelling, and so on; and must wait patiently, till you come to the application of these elementary principles, at the close, before you can perceive the use of what you are learning.

In the little treatise, upon which the following work is a comment, you have a summary of the *old*, or *Aristotelic* Logic. In a subsequent part of your Academic course, you will be introduced into the *new*, or modern logic, in Mr. LOCKE's Essay on the Human Understanding.

But here let me guard my young friend against the fashionable folly which prevails in the present day, of despising what is old; and throwing aside, as antiquated, what goes under such a name as ARISTOTLE'S. Aristotle was a man of the most extraordinary mental powers; a preceptor worthy of the great monarch, who was placed under his instruction; and it is truly disgusting, to every person of real information, to hear the labours of such ancients sneered at now, by empty scribblers, whose names will not survive the ephemeral notice which they have acquired by the dint of impudence. It is certain that the ancients made little progress in experimental philosophy; and in ethics, destitute

as they were of the light which the Christian revelation has diffused, it is not strange that their information should appear greatly defective. But in every other branch of literature and science they are our masters; and their works remain the standards of excellence. They are despised only by those who have not sufficient industry to become acquainted with them, or sufficient taste and genius to relish and to imitate them.

The origin of the old Logic is traced to the disputes which prevailed in the schools of the Greek Philosophers. To assist them in maintaining these disputes, Zeno, of Elea, (who flourished about the middle of the fifth century, A. C.,) is said to have invented the art. But however it may have been originally designed for this purpose, or applied to it by some; you are not to consider such an unworthy object as entering at all into the end proposed by Aristotle. The art is *abused*, when it is employed in maintaining a disputation with subtlety, for the sake of victory, and not of truth. But such an occasional abuse of it is no argument against its intrinsic usefulness.

The old Logic is to be considered, not as in itself a branch *science* or philosophic knowledge, but as a kind of handmaid to philosophy,—an *art* subservient to the acquisition and communication of such knowledge. And when *philosophy* is defined to be that knowledge of these things, which is *attainable by the sole exercise of reason*, it is distinguished from the knowledge of arts purely *mechanical*, or *experimental*.

I know that this definition is commonly supposed to distinguish philosophy, as *human science*, from the knowledge of truths *divinely revealed*. But I conceive that the former distinction was rather that which Aristotle had in contemplation.

[NOTES—INTRODUCTION:—

1. This definition may, perhaps, seem to the student, in consequence of the word *sole*, to be an exclusive proposition; but the word *sole* does not qualify the subject: to make the proposition exclusive, it should be expressed, "Philosophy only is that knowledge," &c., and it is not sufficient that this be meant.—THYNNE'S *Logic*. Not even is *sole* introduced to qualify the whole predicate, but merely *the part power of reason*. That part of Philosophy which

investigates the properties of matter is called *Natural Philosophy* or *Physics*. That which treats of mind, in the more extended sense in which the properties of spirits are considered, is called *Metaphysics*.

2. There are other parts of Philosophy, Mathematics, Astronomy, &c., but those enumerated are the principal.—THYNNE.

3. Zeno's country, Elia or Velia, in Italy, is specified in order to distinguish him from Zeno of Cyprus, the founder of the Stoic sect.

4. The most essential of Aristotle's improvements are his rules of "de omni" and "de nullo."

5. This refers particularly to Locke, to whose Essay on the Human Understanding this Compendium was designed to be introductory.

6. Logic is both a *Science* and an *Art*. As it investigates the principles on which argumentation is conducted, it is a Science; and an Art when it furnishes rules to secure the mind from error in its deduction.—WHATELEY. The Latin word "ars" comprehends both the notions which we express by the two words Art and Science.—*Oxford Logic*.

QUESTIONS FOR EXERCISE:

What is Philosophy?—Why called a knowledge obtained by reason alone?—What are its principal parts?—By what logical means is it defined?—What is Physics?—What is Ethics?—Who invented Logic?—Into how many parts did Zeno divide it?—Who improved it most?—What is the design of this Compendium?—What is the distinction between the ancient and modern Logic?]

PARS I.—CAPUT I.

LOGICA est ars recte utendi ratione, in cognitione acquirendâ, et communicandâ.

Finis ejus est verum investigare, et inventum aliis interpretari: ideoque *objectum* ejus sunt intellectûs operationes: quarum præcipuæ sunt apprehensio simplex, judicium, et discursus.

Apprehensio simplex, (quæ et *perceptio* dicitur) est operatio quâ mens recipit notiones. *Notio* est repræsentamen rei in intellectu. A recentioribus appellatur *Idea*. Vocabulum notionem exprimens, appellatur *Terminus*.

Terminus est vel singularis, vel universalis. *Terminus*

singularis (quem Grammatici *nomen proprium* appellant) est qui rei unicæ attribui potest, ut *Socrates, Roma*. Hæc res appellatur *Individuum*. *Universalis*, qui pluribus rebus attribui potest, ut *homo, urbs*; aliàs appellatur *generalis, genericus, communis, &c.*

Termini universales dividuntur in univocos, et æquivocos. *Univocus*, pluribus rebus attribuitur eodem sensu. Sic *homo* attribuitur Socrati, Aristoteli, et omnibus aliis hominibus, eâdem manente significatione termini. *Æquivocus* est qui pluribus attribuitur diverso sensu. Sic *Canis* attribuitur animali cuidam, et Sideri.

Termini univoci sunt propriè universales, non vero æquivoci; nam si idem nomen proprium (ut *Petrus*) pluribus individuis attribuatur, erit terminus æquivocus, non vero universalis.

Terminus univocus Græcis appellatur *Synonymus*; et æquivocus, *Homonymus*.

PART I.—CHAP. I.

LOGIC is the art of using reason aright in acquiring and communicating knowledge.¹ Its *end* is to investigate truth, and to communicate it, when discovered, to others: and therefore the operations of the understanding are its *object*. Of these the principal are *simple apprehension, judgment, and reasoning*.²

Simple apprehension, which is also called *perception*, is the operation by which the mind receives notions.³ A *Notion* (called by the moderns an *Idea*) is the representation of a thing in the understanding. A word expressing a notion is called a *Term*.⁴

Terms are either *singular* or *universal*. A singular term (called by grammarians a *proper name*) is that which can be applied to but one thing; as *Socrates, Rome*; and that

thing is called an *Individual*. A universal term is that which can be applied to several things; as *a man, a city*. It is otherwise called general, generic, common, &c.⁵

Universal terms are divided into *univocal* and *equivocal*. An univocal term is applied to several things in the same sense. Thus, it is in the same signification that the term *man* is applied to Socrates, Aristotle, and all other men. An equivocal term is that which is applied to several things in different senses: as the term *dog* is applied to a certain animal, and also to a star.

Univocal terms are properly universal; but equivocal are not. For even the same proper name, as *Peter*, may be applied to several individuals; but although in this case an equivocal term, it yet will not be a universal one.

By the Greeks a univocal term is called synonymous; and an equivocal, homonymous.

COMMENTARY.—PART I.—CHAP. I.

By the *object* of any art or science, you are to understand its subject-matter—that about which the art or science treats. By the *end* of any art or science you are to understand the purpose for which we treat about that object.

Now Logic, like any other art or science, is defined by a proposition declaring both its object and its end. Thus, Logic is said to be *the art of using our reason aright, for the purpose of acquiring and communicating knowledge*;—such knowledge as was before described in the definition given for philosophy.

Here the word *reason* expresses the *object* of Logic, which is afterwards called *the operations of the understanding*, or the intellectual faculties. Logic treats of these; and teaches us to make the best use of them, for a certain purpose expressed also in the definition. That *end*, or purpose, is two-fold: 1. The acquisition of knowledge in our own researches after truth; 2. The communication to others of the truth that we have discovered; in which is included both the clear statement and the convincing proof of it.

The three principal operations of the understanding, and the things immediately connected with each, form the several subjects of the three parts, into which this treatise is divided.

Our ideas are the elementary parts of all our knowledge: and we therefore begin with that faculty of the mind, by which we receive our ideas—called *simple apprehension* or *perception*. I call it a *faculty* of the mind, rather than an *operation*; because the word *operation* implies activity, and it is obvious that many of our ideas (such as those of light, heat, &c.) are not obtained by any active exertion of our minds, but merely admitted by a passive capacity in us to receive them.

You will find more upon this subject in Mr. LOCKE: whose definition also of an *idea*—(namely, that it is *the immediate object of the mind in thought*)—is preferable to that, which you meet with in this Chapter: For when a notion, or *idea*, is defined to be “the representation of a thing in the understanding,” the word *representation* implies that there is a *resemblance* between our ideas and the things which excite them,—that they are a kind of pictures in the mind, or images, of the things. This was a received principle in the Platonic and other schools, but taken up without sufficient examination. Its falsehood was partly perceived by Mr. LOCKE, and more fully detected by our most ingenious countryman BERKELEY.

It would be premature to involve you in the deeply metaphysical disquisition connected with this subject. Only, in general, you may perceive that we have no reason to suppose that ideas, existing in our *minds*, can have any resemblance to things existing *without* our minds.

As Language is the great Medium, by which we must treat of our ideas and communicate our knowledge; *terms*, or “words expressive of ideas,” constitute a necessary part of the subject of Logic.

And here you may observe an analogy between words and ideas. Words are the signs of ideas; and ideas may be considered as the signs of things. And again, considering them both as signs, there is no connection of *resemblance* between either of them and that which they signify;—no resemblance between a word and the idea which it expresses, nor any resemblance between an idea and the thing which produces it.

To illustrate this by an example:—I pronounce the word *heat*; and it is a sign to you of a certain idea, annexed to that word in the English language: but you cannot say that the word has any likeness to the idea. So when you are near the fire, you get the idea of *heat*, and it is a *sign* to you of the neighbourhood of the *thing* called fire. The idea thus conveyed may be regarded as the *language of nature*. But you cannot suppose that there is any *likeness* between your feeling of heat, or the idea of that feeling afterwards recollected in your mind, and anything in the fire which occasions it.

Here however the analogy between words and ideas is broken off, and a difference to be observed. Words are *arbitrary* signs, deriving their significancy from the discretionary agreement of men, that such a sound shall denote such an idea. And hence we find the same idea expressed, in different countries, by different words. But ideas, considered as the *language of nature*, receive not their significancy at all from the arbitrary will of men; it is determined in the natural constitution of things, by the author of the Universe. And hence the same things excite the same ideas every where.

The distinction of universal terms into *univocal* and *equivocal* is altogether groundless; no term being universal, but that which is applicable to several individual things *in the same sense*, i. e. which is univocal. A singular term itself, or proper name, may be applied to several individual things *in different senses*; as twenty-four horses may be called by the same proper name BUCEPHALUS; but it is not in the same meaning that it is applied to any two of them; whereas when we call them all *horses*, we mean the same thing by applying that universal term to each.

Thus you may see that, in order to make the definitions of singular and universal terms precise, we should add to each of them the words—"in the same sense;" and then the subdivision of the latter into univocal and equivocal must be discarded. And accordingly the word *Dog*, given as an instance of an equivocal term, is truly an universal term, and univocal, in its application to animals of the canine species, because it is attributed to all of them *in the same sense*; but when applied to the *dog-star*, it is not an

universal term at all, but a singular term; the proper name that particular star.

[NOTES.—PART I.—CHAP. I.:—

1. Logic is defined by a proposition declaring both its end and its object.

2. There are three ends proposed for Logic; Zeno's, to assist disputation; Aristotle's, to assist investigation; and Murray's, to understand logical allusions.—*See COMM.* The difference between an *Art* and *Science* is this: Science treats of speculative knowledge, and an *Art* is the application of that to practice.

3. Simple apprehension is the faculty (rather than operation) by which we get ideas, judgment is the power to compare ideas, so as to determine their agreement or disagreement, and to reason is to infer the agreement or disagreement of ideas, incapable of immediate comparison, from their comparison with other ideas.

4. Significant words are divided into Terms and Particles. Terms are the names of ideas. Particles intimate, but do not denominate relations of ideas.—*THYNNE'S Logic.*

5. Some have thought the definitions of singular and universal terms incomplete, and they would recommend to define a singular term as a "term which can be applied to but one thing, in the same sense;" and an universal term, "that which can be applied to several things in the same sense."—*THYNNE.* The distinctions between terms and ideas are the following: Terms are verbal, arbitrary, and the mediate objects of the mind: Ideas are mental, not arbitrary, and the immediate objects of the mind.

QUESTIONS:—

What is Logic?—What is its end and its object?—What are the principal operations of the understanding?—What is simple apprehension?—What is a term?—How many kinds of terms?—What is a singular term?—What is an universal term?—How are universal terms divided?—Why are not univocal terms properly universal?—What names did the Greeks give to univocal and equivocal terms?—What is Locke's definition of an idea?—What objection is made to Murray's definition of a notion?—Why is Murray's division of universal terms groundless?—How do universal and synonymous terms differ?]

CAPUT II.

COMPREHENSIO termini est aggregatum simpliciorum idearum, ex quibus simul sumptis, conficitur notio quam terminus significat. Sic termini *homo* comprehensio, est

aggregatum Idearum substantiæ, corporis, vitæ, sensationis, et rationis: hæ enim conficiunt notionem hominis.

Extensio termini est aggregatum omnium Individuorum, de quibus sigillatim terminus ille prædicari potest. Sic ejusdem termini *homo* partes extensionis sunt Alexander, Philippus, &c.

Termini fiunt universales ex eo quod statuuntur nomina Idearum universalium; et Ideæ fiunt universales abstractione.

Abstractio est separata consideratio quorundam attributorum, reliquis prætermiſſis. In abstrahendis Ideis, i. e. in efficiendis Ideis universalibus, mens ex omnibus attributis, quæ conficiunt Ideam individui, ea omittit quæ illi individuo sunt propria: ea vero retinet, quæ illi cum aliis individuis sunt communia. Ex. gr. Idea hominis cujusvis Individui conflatur ex ideis substantiæ, corporis, vitæ, sensationis, rationis, unà cum Ideis existentiae in loco et tempore determinatis, certi alicujus vultus, &c. Ex his posteriores, (scil. existentiae in loco et tempore determinatis, vultus, &c.) illi individuo sunt propriæ; reliquæ vero sunt illi cum aliis communes. Si ergo, omissis posterioribus, priores solæ retineantur, Idea non amplius est repræsentamen individui, sed omnium quibus priores sunt communes, hoc est, omnium hominum. Hæc Idea potest ulterius abstrahi: nam ex ideis substantiæ, corporis, vitæ, sensationis, et rationis, ex quibus conflatur Idea hominis, ultima sola, (scil. rationis) est homini peculiaris; si ergo, manentibus reliquis, hæc sola omittatur, residuum non amplius est Idea hominis, sed omnium entium quibus priores sunt communes, hoc est, omnium animalium. Hæc quoque Idea posset ulterius abstrahi, et sic deinceps, donec perveniatur ad Ideam generalissimam.

Ex supradictis videre licet, comprehensionem Ideæ, in abstractione quâlibet minui: et diminutâ comprehensione, augeri extensionem; et vice versâ.

Patet quoque, si cujusvis ideæ comprehensio sit pars comprehensionis alterius, posterioris extensionem esse partem extensionis prioris: si vero duarum Idearum, comprehensio sit eadem, eandem esse et extensionem.

CHAP. II.

THE *comprehension* of a term is the collection of all the simpler¹ ideas which together make up the notion,² that the term signifies. Thus the comprehension of the term *man* is the collection of the ideas of substance, body, life, sensation, and reason: for these together make up the notion of a *man*.

The *extension* of a term is the collection of all the individuals, of which severally that term may be predicated. Thus of the same term *man*, the parts of the extension are Alexander, Philip, &c.

Terms become universal by being made the names of universal ideas: and ideas become universal by *abstraction*.³

Abstraction is the separate consideration of some attributes, the rest being omitted.⁴ In abstracting ideas, (that is, in making universal ideas) the mind, out of all the attributes which make up the ideas of the individual, omits those that are peculiar to that individual; but retains those that are common to it with other individuals. For instance, the idea of any individual man is made up of the ideas of substance, body, life, sensation, reason, along with the ideas of existence in a determined place and time, of a certain countenance, &c. Of these the latter (namely, existence in a determined place and time, countenance, &c.) are peculiar to that individual; but the rest are common to him with others. If then, omitting the latter, the former alone be retained, the idea is no longer a representation of that individual, but of all to whom the former are common, that is, of all men. This

idea may be farther abstracted : for of the ideas of substance, body, life, sensation, and reason, of which the idea of *man* is made up, the last alone (namely, reason) is peculiar to man. If, then, keeping the rest, this alone be omitted, the remainder is no longer the idea of a man, but of all beings to whom the former are common, that is, of all *animals*. This idea also might be further abstracted ; and so on, till we come to the most general idea.⁵

From what has been said it may appear, that in any abstraction of an idea the comprehension is diminished ; and that by lessening the comprehension, the extension is increased : and *vice versâ*. It is plain also that if the comprehension of any idea be part of the comprehension of another, the extension of the latter is part of the extension of the former ; and that if the comprehension of two ideas be the same, their extension also will be the same.

COMMENTARY.—CHAP. II.

We have seen that terms differ, with respect to the number of individuals to which they may be applied, or of which they may be predicated :—you are to understand the same thing by both these expressions. For it appears that some can be applied to but one individual thing in the same sense, while others can be applied to several. And of these latter, called *universal* terms, some can be applied to, or predicated of, a greater number of individuals than others.

Thus the words *dog* and *greyhound* are both universal ; but you know that the former term can be applied to a greater number of individual things, than the latter. You can give the name of *dog* to a greater number of things than you can give the name of *greyhound* to : or, in other words, there are more objects, of each of which you can say—*that is a dog*—than—*that is a greyhound*.

Now the collection of individuals, to each of which we may thus apply a term, or, to each of which we may give that name, is called the *extension* of the term. And it is plain

from this, that singular terms have the least extension of all; the extension of any singular term consisting of the one individual thing, to which that proper name belongs. It is plain also that, of universal terms, some have a greater extension and some a smaller, according to the number of things, to which they may be applied in the same sense.

But again: all words are designed to express notions, or ideas; and if we observe our ideas, we shall find some more *complex* than others, or consisting of a greater number of component parts. Thus, the idea which you express by the word *dog* is less complex than that expressed by the word *greyhound*; for the latter is made up of all the parts, or simpler ideas, which enter into the composition of the former, and includes, besides, the notion of the additional characters, which distinguish that particular species of dog.

Now the collection of simpler ideas, which make up the notion expressed by a term, is what we call its *comprehension*. And different terms are said to have a greater or smaller comprehension, according as the ideas they express are more or less complex, or may be resolved into a greater or smaller number of component parts.

Thus we see that different terms may be compared together in two respects. 1. With respect to the complexity of the ideas which they express; 2. With respect to the number of individuals of which they may be predicated: or, in other words, with respect to their *comprehension*, and with respect to their *extension*.

In the instance which has been given, of the two terms *dog* and *greyhound*, you see that the term, which has the smaller comprehension, has the greater extension, and *v. v.* The idea expressed by the word *greyhound* is more complex, or consists of a greater number of parts, than the idea expressed by the word *dog*; and the individuals, of which the term *greyhound* may be predicated, or which may be called *greyhounds*, are fewer in number than the individuals, which may be called *dogs*.

And so it must always be; the greater the comprehension of a term, the less must be its extension; and that for the following reason. Every component part that is included in the notion, which the term signifies, limits the application of it to those individual things which have a character or attribute, corresponding to that part of the idea. If, for

instance, whiteness—roundness—roughness, &c. make part of the notion expressed by a term, that term can be applied only to such things as are white, round, rough, &c.

Thus, in addition to the notion of an animal of the canine species, the term *greyhound* is intended to express the notion of a particular shape which some *dogs* have, and some have not; and as the notion of this particular shape is included in the comprehension of the term *greyhound*, that name can be applied only to such dogs as have that shape. Thus again; if the idea of a straight horn growing out of the forehead be included in the notion expressed by a word, that word can be applied only to such individual things as have a horn, and that a straight one, growing out of their foreheads.

In short, it is the comprehension of a term that determines its extension. If you hear the word *camelopardel*, and want to know what things may be called by that name; you must learn the *meaning* of the term, i. e. you must learn all the component parts of the notion expressed by that term: and when you know all these, and see an animal which does not possess characters corresponding to them all, you know that the animal is not a *camelopardel*, or, that this individual thing is not included in the extension of the word; inasmuch as the word can be applied only to those things, which possess characters corresponding to every part of the notion expressed by the word.

Thus you may see, that each component part in the comprehension of a term limits its application to those things which have a corresponding character; and, therefore, that the greater the number of those component parts, or, the greater the comprehension of the term, the smaller is the number of individual things, to which it may be applied, or the less is its extension.

We observed, in the former chapter, that terms were either singular or universal; and we now come to consider how it happens, that one and the same term can be applicable to several individuals in the same sense; or how terms become universal. And this leads us to observe a corresponding difference between our *ideas*.

We have ideas of individual things, as of an individual *greyhound*; and the name of that idea is a singular term, or the proper name of that *greyhound*. And it is applicable to

no other in the same sense ; because no other has characters corresponding to *all* the component parts, which make up the notion of that particular greyhound.

But we also have universal ideas,—ideas of *sorts* or *classes* of things:—and the names of such ideas are universal terms, applicable in the same sense to all individuals of these sorts or classes. Such ideas the mind forms by *abstraction*, or by “ the separate consideration of some attributes, omitting others.”

Thus, observing several individual greyhounds, and having (suppose) a proper name for each, I perceive that there are certain *common* characters, in which they all agree or resemble each other ; while each of them has certain distinctive characters that the others have not, and which, entering into the comprehension of his proper name, confine its application to that particular greyhound. If, therefore, I put out of my consideration those distinctive characters peculiar to each, and consider those only in which they all agree ; I shall have the *universal—general—or abstract* idea of the greyhound species, which is less compounded than my notion of any individual greyhound. And then the universal term, *greyhound*, expressing that general idea, is applicable in the same sense to every individual of the species ; or, I may say of each of them in the same sense—“ that is a *greyhound* :” because every one of them possesses characters corresponding to all the component parts of this general notion ; or possesses all the attributes, the ideas of which make up the comprehension of this universal term, none but the attributes common to them all having been retained in forming this abstract notion.

In like manner, I may form the general idea expressed by the universal terms *terrier*, *beagle*, *foxhound*, &c. each of them applicable in the same sense to all individuals of that sort or class, as expressing a notion made up only of the common characters in which the individuals of that class agree.

Again ; comparing these several abstract ideas together, I observe that they have several component parts in *common* ; others, distinctive of each sort or class : and by retaining the former alone, and omitting the consideration of the latter, I may form an idea still more abstract or *general*, which is expressed by the universal term *hound*. And

because its comprehension includes only the ideas of those attributes, which are possessed in common by *greyhounds*, *terriers*, *beagles*, *foxhounds*, &c., its extension will therefore embrace all the individuals of all these sorts, or will be applicable to them all in the same sense.

And so, by further continuing this process of abstraction, I may form the still more general idea expressed by the more universal term *dog*; thence proceed to the idea of a *quadruped*; thence to that of a *living creature*; and so on; till I come to the *most general* idea,—an idea so decomposed, that I cannot *omit* the consideration of any attributes consistently with retaining any other.

Now, comparing together the names of any two ideas thus formed by successive abstractions, e. gr. *hound* and *dog*, it is plain that the name of the more abstract idea has a smaller comprehension, and a greater extension, than the other. It has a smaller comprehension than the other, because the idea expressed by the word *dog* is less complex than the idea expressed by the word *hound*; some attributes or characters, which entered into the notion of the latter, being omitted, in the abstraction by which we form the notion of the former. And it has a greater extension, because the attributes, which have been omitted, confined the application of the term *hound* to those individual dogs which possess these distinguishing attributes.

Again; if the comprehension of one term be included in the comprehension of another (as the comprehension of the word *dog* is included in that of *greyhound*), the extension of the latter must be included in the extension of the former. The notion of a *dog* including in it no attributes, that are not also included in the notion of a *greyhound*, every individual that may be called a *greyhound* must have all the attributes that are included in the comprehension of the word *dog*; and therefore may be also called a *dog*, or, is included in the extension of the word *dog*.

It is also obvious, from what has been said of the dependence of the extension of a term upon its comprehension, that if the comprehension of two terms be the same, their extension also must be the same, and v. v. In fact, the two terms are then completely synonymous, expressing the same notion; and therefore applicable to the same individuals.

It is also plain that, as the extension of a singular term

(consisting of the one individual which bears that proper name) is less than the extension of any universal term; so its comprehension must be greater than that of any universal term, which includes this individual in its extension: the notion expressed by the universal term being formed by omitting the consideration of some attributes, which belong to that individual and enter into the comprehension of its proper name; while other attributes are retained, which it possesses in common with other individuals.

It appears, also, that the forming of abstract ideas, or the classing of things into sorts, is the mere work of the mind; taking occasion, however, from the *natural* resemblance we observe between different things, which possess some common characters. Upon this subject, you will find more in Mr. LOCKE.

I have treated the subject of this chapter the more minutely, because a clear understanding of its matter is absolutely necessary to your understanding any of the following chapters aright: and many students remain, through all their course, ignorant of this little treatise, and puzzled by it, as if it contained inexplicable mysteries; merely because they do not know distinctly what we mean by the comprehension and extension of a term; or have never closely considered what they intend, when they say—*this dog is a greyhound, and that dog is not a greyhound.*

You may observe that the two last paragraphs of this chapter, in the compendium, are inaccurately expressed. We may speak of the *complexity* of an idea; but not properly, of its comprehension or extension. The latter phrases belong, not to *ideas*, but to *terms*.

[NOTES—PART I.—CHAP. II.:—

1. SIMPLER with regard to the entire idea of a term, but it is not meant that the parts are to be absolutely simple.

2. Our Author would seem to distinguish notion, as the compound, from idea as a component part.—THYNNE.

3. Terms become singular by being made the names of the ideas of individuals. There are two applications of terms; they are philosophically applied to their ideas, but popularly to things.

4. The process by which the mind arrives at the notions expressed by "common," or in popular language, "general" terms, is properly called *generalization*, though it is usually (and truly) *said to be the business of abstraction*, for generalization is one of

the purposes to which abstraction is applied. When we draw off and contemplate separately any part of an object presented to the mind, disregarding the rest of it, we are said to abstract that part. Thus a person might, when a rose was before his eyes or mind, make a scent a distinct object of his attention, laying aside all thought of the colour, form, &c.; and thus, even though it were the only rose he had ever met with, he would be employing the faculty of abstraction; but if, in contemplating several objects, and finding that they agree in certain parts, we abstract the circumstances of agreement, disregarding the differences, and give to all and each of these objects a name applicable to them in respect of this agreement, *i. e.* a common name as rose, we are then said to generalize. Abstraction, therefore, does not necessarily imply generalization, though generalization implies abstraction.—WHATELEY.

5. The species of abstraction meant in this Compendium, is generalization properly, and not abstraction.

QUESTIONS:—

What is the comprehension of a term?—Why do you say “which necessarily unite?”—What is the extension of a term?—What do you mean by “in the same or the given sense?”—How do terms become universal?—How do ideas become universal?—What do you mean by abstraction?—What is the use of abstraction?—What is the effect of abstraction on comprehension and extension?—What extension has a singular term?—Mention some of the differences between comprehension and extension?—What is the foundation of abstraction?—If the comprehension of one idea be a part of the comprehension of another, what will be the relation of their extensions?—What will be the relations of their extensions when their comprehensions are the same?]

CAPUT III.

TERMINORUM universalium quinque sunt classes, quæ et *Prædicabilia* appellantur, scil. genus, species, differentia, proprium, et accidens.

Genus est terminus universalis, qui sub se continet duos vel plures terminos, qui sunt quoque universales. Sic *animal* est genus, nam sub se continet *hominem* et *bestiam*, qui sunt etiam termini universales.

Species est terminus universalis qui universaliori subest. Sic *homo* est species, nam continetur sub *animali*, qui est terminus magis universalis.

Genus est vel summum, vel subalternum. Species, vel infima, vel subalterna. Genus *summum*, quo non est superior genus. Species *infima*, quâ non est inferior species. Genera et species *subalterna* dicuntur, quæ inter summum genus et infimam speciem interposita, respectu superiorum sunt species, respectu inferiorum sunt genera.

Ex. gr. Sit *Substantia* summum genus, hujus species sunt *corpus* et *spiritus*: *corpus* itaque est species, sed et potest esse genus, cujus species sunt *vivens* et *mortuum*; *vivens* similiter potest esse genus, cujus species sunt *animal* et *planta*; *animal* quoque est genus, cujus species sunt *homo* et *bestia*; *homo* vero est species infima. In hac serie (*substantia, corpus, vivens, animal, homo*,) primus terminus *substantia*, est genus summum, et nequit esse species; ultimus *homo*, est species infima, et nequit esse genus; quivis verò intermedius est et genus et species. Sic *animal* est genus respectu *hominis*, et species respectu *viventis*.

Quoniam omne genus summum cum suis inferioribus appellatur *Categoria* vel prædicamentum, tota series appellatur *linea prædicamentalis*.

Ex modo dictis de abstractione, patet genus esse nomen ideæ magis abstractæ, et speciem minus abstractæ; ideoque genus habere majorem extensionem, speciem verò, majorem comprehensionem.

Differentia essentialis est nomen præcipui attributi essentialis, quod invenitur in specie, non vero in genere.

Proprium est nomen essentialis attributi, non præcipui, sed ab eo pendens, quod invenitur in specie, non vero in genere.

Ex. gr. Omnia attributa quæ sunt in comprehensione generis *animal*, sunt etiam in comprehensione speciei *homo*, et præterea *rationalitas*, et quæ a *rationalitate* pendent; *rationalitas* ergo est differentia essentialis hominis, et attributum quodlibet essentialiter inde pendens, (ut *legi subiectum esse*) est proprium hominis.

Accidens est nomen attributi non essentialis, quod ideoque adesse vel abesse potest sine subjecti interitu, ut *Albor* in homine.

CHAP. III.

OF universal terms there are five classes,¹ which are also called *Predicables*, viz. genus, species, difference, property, and accident.²

A *Genus* is a universal term, which contains under it two or more terms that are also universal. Thus, *animal* is a genus, for it contains under it *man* and *beast*, which are likewise universal terms. A *Species* is a universal term, which is contained under a more universal. Thus, *man* is a species; for it is contained under the more universal term *animal*.

A genus is either the *highest* or *subalternate*. A species is either the *lowest* or *subalternate*. The highest genus is that which has no genus above it. The lowest species is that which has no species below it. Those are called subalternate genera and species, which, lying between the highest genus and lowest species, are species with respect to the terms above them, and genera with respect to the terms below them.

For instance, let *substance* be the highest genus, whose species are *corporeal* and *spiritual* substance. *Corporeal substance*, or *body*, is therefore a species; but it may also be a genus, whose species are *living* and *lifeless* body: *living* body in like manner may be a genus, whose species are *animal* and *plant*: *animal* likewise is a genus, whose species are *man* and *beast*; but *man* is the lowest species. In this series (*substance*, *body*, *living body*, *animal*, *man*,) the first term, *substance*, is the highest genus, and cannot be a species; the last, *man*, is the lowest species, and cannot be a genus; but every intermediate term is both a genus and species.

Thus, *animal* is a genus with respect to *man* ; and a species with respect to *living body*.

Every highest genus, with the terms below it, being called a *category* or *predicament*, the whole series is called a *predicamental line*.³ And from what has been said above upon abstraction, it is plain that a genus is the name of a more abstract idea ; and a species, of a less abstract : and therefore that the genus has a greater extension, but the species a greater comprehension.

An *essential difference* is the name of the principal essential attribute, which is found in the species, but not in the genus.

A *property* is the name of an essential attribute, not the principal, but depending on it ; which is found in the species, but not in the genus. For instance : all attributes which are in the comprehension of the genus *animal*, are also in the comprehension of the species *man*, and besides *rationality*, and those which depend on rationality. *Rationality* therefore is the essential difference of *man* ; and any attribute essentially depending on it (as *being subject to law*) is a property of man.⁴

An *accident* is the name of an attribute not essential : which therefore the subject may have or not have, without being destroyed : as *whiteness* in a man.

COMMENTARY.—CHAP. III.

By the enumeration of the five *predicables*, the old Logicians intended to enumerate all that can be logically asserted about anything : that is, they meant to say that, when we make any logical affirmation about anything, we can declare only to what *genus* or *species* the thing belongs, or what the *essential difference* of it is, or some *property*, or *accident*, which it has.

It would be premature to examine the validity or usefulness

of this enumeration, till you have learned the doctrine of the second part. And it would only involve you in unimportant subtleties, to assign the reasons, why some Logicians give the name of *universals* to these five predicables; while others contend that it cannot be properly given to some of them.

You may content yourself, for the present, with understanding the meaning of the terms employed in this chapter. And here observe, that all *genera* and *species* are universal terms; and that to constitute any universal term a *genus*, it is necessary that the terms included under it should also be universal terms. Hence the *species infima*, though an universal term, and therefore including under it other terms, yet is not a *genus*; because the only terms included under it are *singular* terms: while all the other species, between it and the *summum genus*, or highest term, are also genera with respect to the species below them.

Thus—the term *quadruped* is a *genus*, because it includes under it several universal terms, called species, as *dog*, *horse*, &c. Again, the term *dog*, while it is a *species* of the genus *quadruped*, is itself also a *genus*; because it includes under it several universal terms, as *greyhound*, *beagle*, &c. But the universal term *greyhound* is a *species infima*, or lowest species; including under it no terms, but the *proper names* of individual greyhounds. It must be acknowledged, however, that species still inferior might be formed, if we chose to classify greyhounds, according to their country, colour, size, age, &c. Nor can we wonder at this uncertainty about the determination of the *species infima*, when we recollect (what has been observed in the preceding chapter,) that the classifications, called genera and species, are altogether the creation of the mind. Whatever idea we first form by abstraction from *individuals*, that is properly the *species infima*.

Any *genus summum*, with all its species regularly arranged under it, is called a *category* or *predicament*. And, inasmuch as the genus at its head must have at least *two* species immediately under it, and each of these (if not *species infimæ*) must have at least *two* species immediately under them, and so on; it appears that any complete category will consist of *several* series of terms; any one of which series, beginning with the *summum genus*, and ending with an *infima*

species, is called a *predicamental line* : of which there will be as many in the category as there are *species infima*.

In such a series, it is plain from what has been said in the last chapter, that the *genus summum* has the least comprehension and greatest extension of all the terms, being the name of the most abstract idea : and that the *species infima* has the greatest comprehension and least extension of them all ; though, as an universal term, it has a less comprehension and greater extension than any of the singular terms which may be included under it.

All things, whether animate or inanimate, have certain *attributes*, or characters, belonging to them : and such attributes are of two kinds, essential and non-essential. By *essential* attributes we mean those, without which a thing cannot be what it is. By *non-essential* attributes, (otherwise called *accidents*,) we mean those, which a thing may either possess, or not possess, and yet continue to be what it is. The attributes, by which individuals of the same *species infima* are distinguished from each other, are of the latter class : those, by which different species of the same genus are distinguished from each other, are of the former class.

Thus, one greyhound is distinguished from another by its size, colour, age, &c. but all these circumstances are *non-essential* attributes, or *accidents*, because they might any or all of them be altered, and yet it would continue to be a greyhound. But the characters, by which the species of dog called *greyhound* is distinguished from the species called *beagle*, are *essential* attributes ; because a dog cannot be a *greyhound* without possessing these characters.

Now among the essential attributes,—all of which are necessary to the species, or must belong to an individual in order that it should be of that species,—there is one that is the leading, or *principal*, attribute of the species ; and others, that are subordinate, as resulting from this. The former is called the *essential difference* ; the latter are called *properties*.

It is plain, therefore, that any species can have but one *essential difference*, because there is but one of its attributes that is the *principal* one ; but that it may have several *propria*, or subordinate attributes, necessarily resulting from the principal.

All the essential attributes, of which we speak, being the characters which distinguish the species from every other

species of the same genus, are none of them included in the comprehension of the genus. For all that is included in the comprehension of the genus, is common to all the species of that genus.

By the two first predicables, the old Logicians conceived that we declare *QUID sit res*; by the rest *QUALE sit*. And then they proved the completeness of the enumeration, by the following reasoning:—whatever we assert about a thing, we can only assert either *quid sit* or *quale sit*—either what it is, or what characters belong to it; the former, either perfectly by the *species infima*, or imperfectly by a *genus*; and the latter, either by its *essential* or its *non-essential* characters.

But in the whole of this specious reasoning, they were not aware that we do not know of any thing *QUID sit*, and can only say *QUALE sit*; that we know nothing of any thing, but its attributes or characters. Accordingly, when we define a species by its *genus* and *essential difference*, in the former we declare the attributes, which it has in common with certain other species; in the latter the attribute by which it is distinguished from those other species which they have not in common with it.

If by *essential* attributes we mean those which a thing must have in order to belong to a particular kind or sort; the attributes, that make up the comprehension of the genus, will be the essential attributes of each of its species; and the attributes of the *species infima* will be the essential attributes of an individual, which will cease to be *what it is* (i. e. a thing of that kind) if it lose any of those attributes.

If by *essential* attributes we mean those which a thing must have in order to *be itself*, then all the attributes, which make up the comprehension of a species, are essential to that species; both those that are included in the comprehension of the genus, and those that are not; for change any of them, and it is a new, different, abstract idea or species. The abstract idea constitutes the being, or essence, of any species; and therefore the sameness of the idea is essential to the sameness of the species. But when, in this sense, we apply the subject to individuals, we are involved in all the metaphysical obscurity of the *principium individuationis*, from our utter ignorance of the real essence of substances,—or—*what makes me be what I am*.

N.B. The last four paragraphs may be altogether passed over by most of the young students.

[NOTES—PART I.—CHAP. III. :—

1. For this classification of universal terms, we are indebted to Porphyry.

2. The ancient logicians considered that in a proposition, we tell of the subject either "quid sit" or "quale sit;" what it is, or what are its attributes.—THYNNE. See COMM.

3. A predicamental line begins with a highest genus, and descends through all the terms directly intervening to a lowest species. Since every genus must have two species, it is evident that one predicament must involve many predicamental lines. The number of such lines is the same as the number of lowest species.

4. A property of man is risibility.

QUESTIONS :—

Explain the nature of the five predicables?—Why must every genus have two species under it?—How many kinds of genera?—How many kinds of species?—What is the "summum genus"?—What is the "species infima"?—Are all universal terms genera?—Why are predicables so called?—What is a predicamental line?—What is an essential difference?—What is a property?—What is an accident?]

CAPUT IV.

PHILOSOPHI antiqui res omnes ad certas classes revocabant, et cujusque classis naturam explicare profitebantur, exinde sperantes ipsarum rerum perspicere posse naturam, et relationem mutuam: has classes decem esse statuebant, easque appellabant *categorias*, vel *prædicamenta*. Categoria quælibet continet unum summum genus cum suis inferioribus; ideoque definitur series rerum sub eodem summo genere gradatim dispositarum.

Quoniam vero categoriarum numerus est arbitrarius, et doctrina parum utilis, sufficiat earum nomina breviter recensere.

1°. *Substantia*, quæ est ens per se subsistens, i. e. quod potest existere sine existentia alterius cujusvis entis, in quo inhæreat.

2°. *Quantitas*, cujus tres sunt species, numerus, tempus, et magnitudo; magnitudinis iterum tres sunt species, linea, superficies, et corpus.

3°. *Qualitas*, cujus quatuor sunt species, 1°. *Habitus*, ut *Scientiæ*, *virtutes*, &c. 2°. *Potentia naturalis*, ut, *Intellectus*, *voluntas*, &c. 3°. *Patibilis qualitas*, ut *Soni*, *colores*, &c. 4°. *Forma et figura*.

4°. *Relatio*, quæ locum habet cum unius *Ideæ* consideratio alterius considerationem includat. Sic consideratio *Domini* includit quoque considerationem *servi*. Res quæ primariò consideratur, appellatur, *subjectum relationis*, vel *relatum*; et res cujus consideratio includitur, *terminus relationis*, vel *correlatum*: et eorum nomina vocantur *relativa et correlativa*.

5°. *Actio*, ut *Calefacere*.

6°. *Passio*, ut *Caleferi*.

7°. *Ubi*, vel potius vocabula quæ respondent quæstioni quæ fit per ubi, ut, *Ruri*, *Athenis*.

8°. *Quando*. vel vocabula, quæ respondent quæstioni quæ fit per quando, ut *Cras*, *Anno Creationis*.

9°. *Situs*, ut, *Sedere*, *stare*.

10°. *Habitus*, ut *vestitum*, *armatum esse*, &c.

CHAP. IV.

THE ancient Philosophers reduced all things to certain classes, and professed to explain the nature of each class,—in the hope that the nature and mutual relation of the things themselves might thence be discerned. They fixed on ten such classes, and called them *categories* or *predicaments*.¹ Each category contains one highest genus, with the terms that come under it; and therefore is defined a series of things regularly arranged under the same highest genus. But the number of categories being arbitrary, and the doctrine of little use, let it suffice briefly to recite their names.²

1. *Substance*; which is a thing subsisting by itself; i. e.

which can exist without the existence of any other thing to inhere in.

2. *Quantity*; of which there are three species, *number*, *time*, and *magnitude*. Again, of *magnitude* there are three species,—a *line*, *surface*, and *solid*.

3. *Quality*; of this there are four species: 1. *Habit*, as the *sciences*, *virtues*, &c. 2. *Natural power*, as the *understanding*, *will*, &c. 3. *Patible quality*, as *sounds*, *colours*, &c. 4. *Form* and *figure*.

4. *Relation*; which takes place when the consideration of one idea includes the consideration of another. Thus the consideration of a *master* includes also the consideration of a *servant*. The thing which is primarily considered is called the *subject of the relation*, or *relatum*; and that, the consideration of which is included, is called the *term of the relation*, or *correlatum*; and their names are called *relative* and *correlative*.

5. *Action*; as *to warm*.

6. *Passion*; as, *to be warmed*.

7. *Ubi*; or rather the words which answer to the question *where?* as, *in the country*, *at Athens*.

8. *Quando*; or rather the words which answer to the question *when?* as, *to-morrow*, *in the year of the Creation*.

9. *Posture*; as, *to sit*, *to stand*.

10. *Habit*; as, *to be clothed*, *to be armed*.³

COMMENTARY.—CHAP. IV.

BY the enumeration of the ten *categories*, or predicaments, the old logicians intended to classify all things which can be the subject of thought or discourse; so that every thing, about which we speak, may be referred to some one or other of these ten classes. They are said to have been invented by Archytas of Tarentum, a mathematician, and the master of Plato.

Thus the *predicaments* are to be carefully distinguished from the *predicables*. The former are designed for a classification of all the possible things, about which we can discourse. The latter, for a classification of all the possible matters of assertion, about these things.

There are two reasons assigned for passing over the subject of the categories slightly: 1. That the number of them is arbitrary; 2. That the doctrine of them is of little use. Let us examine these two arguments distinctly; and we shall see that the first is of no weight at all, and that the second is to be received with considerable limitation.

When it is said that the number is arbitrary, you are to understand that there might be another enumeration, consisting of more or fewer classes; which would equally answer the purpose, of arranging and classifying all things. But is this any argument at all, against the doctrine of the categories? No more than it would be any argument against a methodical arrangement of books in a library, that no one arrangement of them could be employed, for which another might not be substituted.

And when it is said, in the second place, that the doctrine is useless, you are to understand that this classification of all things does not enable men to perceive the nature and mutual relations of the things themselves. And no doubt, it does not; and any of the old philosophers who expected that it would, were indeed very absurd in the expectation. It must be acknowledged also, that some of them employed the doctrine of categories, rather for enabling them to talk learnedly, than to think justly. But although no arrangement can, of itself, enable men to understand the nature of the things arranged, is an orderly arrangement of things, therefore, of no use? Nay; is it not sometimes most importantly subservient to the due examination of them, and thus helpful to the right understanding of them?

To employ the former illustration: no possible arrangement of books in a library can, by itself, make me know what the books contain; but, if the library be large, is not a classification of them needful, for enabling me with facility to examine them, and find out their contents? And will not even a bad classification of them be better than none? As promoting this object, will it not be considerably preferable to their lying in disorderly heaps? And though some pre-

tenders to learning may make no other use of the arrangement in the library, than to learn the title pages of the books and talk of them; does that lessen the importance of the advantage to the really studious scholar?

Now, really, the subjects of thought and discourse are so multitudinous and diversified, that an orderly classification of them all must be very desirable to a philosopher; and I will say, that even a bad one is better than none. The classification given in the ten categories is certainly a bad one; and, when I come to the 10th chapter of the 2nd part, I shall have occasion to show that it transgresses one of the laws of good *division*. Yet, while modern logicians have proposed other classifications, perhaps none of their lists of categories would be found wholly unexceptionable.

In this chapter, you have little more given you than the names of the ten *summa genera*, which are at the head of the ten categories, with some of the *species* under two of them.

There is also given a definition for the first of these *summa genera*, *Substance*; upon which it is necessary to observe that, when Substance is said to be "a thing *subsisting by itself*," you are not to understand the expression as denoting independence of existence, or existing independently of everything else; but as distinguishing the manner in which Substances exist from the manner in which the attributes of substances exist. An attribute cannot exist by itself, *i. e.* without existing in some Substance, to which it belongs. Thus, magnitude, colour, figure, &c., cannot exist, but as belonging to some Substance that has that figure, colour, and magnitude.

It is also to be observed, that all the nine latter categories include but attributes of Substances; and that the nine *summa genera* at the head of them are, more properly, species of a higher genus,—namely—things not existing by themselves.

We may add that, when Substance is reckoned a *summun genus*, no account is taken of that universally extensive word—*ens*, or, *thing*, by which it is defined. And this, because we cannot consider the import of the word, separately from the consideration of *some kind of thing*.

It should be observed on the 4th category, that the *subiectum* and *terminus relationis*, or the two things between which the *relation* subsists, are supposed by the old logicians

to be, both of them, Substances. Without attending to this, the 4th category would not appear distinct from some of the others. You are also to observe, that there may be *relative* names which have no *correlatives* answering to them, in the language. Upon this you will find more in Mr. LOCKE.

Under the 7th category are ranked words, denoting the place in which—to which—or from which—any thing is: and you are to distinguish between this and the 9th category, which signifies what we call, in English, *posture*.

Observe that under the 8th category come only those words which answer the question—*when?* Other words of time, answering the question—*how long?* come under the 2nd category; as an hour, a year, &c.

The 10th category of *habit* (under which are ranged the various modes in which bodies are attired) is to be distinguished from the *habit*, that is a species of *quality*: and which denotes an adventitious quality, whereby we do anything with facility.

[NOTES—PART I.—CHAP. IV. :—

1. THE ten Categories or predicaments which Aristotle and other logical writers have treated of, being certain general heads, or *summa genera*, to one or more of which every term may be referred, serve the purpose of marking out tracts, as it were, which are to be pursued in searching for middle terms in each argument respectively, it being essential that we should generalize on a right principle, with a view to the question before us; or, in other words, that we should abstract that portion of any object presented to the mind, which is important to the argument in hand. There are expressions in common use, which have a reference to this caution; such as “this is a question, not as to the nature of the object, but as to the magnitude of it;” this is a question of time or of place, &c., the subject must be referred to this or that category.—WHATELEY.

2. The Platonist would describe this classification to Archytas of Tarentum, a preceptor of Plato.

3. In addition to the two rules of division delivered—Part II., Chap. 10—a third has been proposed, that all the parts should be collateral in their predicament; or, in other words, equidistant from some common antecedent genus. This rule is violated by making the categories ten. The division should have been, in the first instance, into substance, which exists in itself, and accident, which exists in substances.—THYNNE.

QUESTIONS :—

What do you mean by a category or predicament?—Why did the ancients invent the categories?—What are their names?—How do

the predicaments differ from the predicables?—What is substance?—How many species of quantity?—How many species of magnitude?—How many of quality?—When does relation take place?—What are the names of the terms that imply relation?—To which of the categories do the 7th and 8th appear reducible?—What do you mean by “ubi?”—What by “quando?”—What does Doctor Murray mean when he says that the number of the categories is arbitrary?]

PARS II.—CAPUT I.

SECUNDA mentis operatio est *Judicium*, quod definitur, affirmatio vel negatio unius Ideæ de altera. *Judicium* verbis prolatum appellatur *Enunciatio*, sæpius vero *propositio*. *Propositio* itaque est affirmatio vel negatio unius termini de alio. Estque vel simplex, vel composita. *Simplex*, quæ non potest in plures resolvi, ut *Homo est Animal*, *Composita*, quæ potest.

Propositio simplex constat ex duabus partibus; subjecto scil. et prædicato. *Subjectum* est de quo aliquid affirmatur vel negatur. *Prædicatum* iterum constat ex duabus partibus, *copulâ et re copulatâ*; ex. gr. *Homo est animal*: in hac propositione, *Homo* est subjectum; *est*, copula, et *animal*, res copulata. Notandum vero est rem copulatam solam (absque copulâ) ut plurimum appellari prædicatum, et quibusdam attributum.

Nullum verbum in propositione agnoscunt Logici, præter substantivum; et si quando aliud occurrat, resolvunt in verbum substantivum, et participium verbi: sic *Homo currit*, resolvitur in hanc propositionem, *homo est currens*.

Subjectum et prædicatum distinguenda sunt sensu orationis, non situ terminorum.

Propositiones simplices dividuntur in *Modales*, et *Puras*. *Modalis* est in quâ occurrit aliquis ex quatuor modis; *necesse*, *impossibile*, *possibile*, *contingit*. *Pura*, in quâ nullus ex iis occurrit.

Modalis constat ex dicto et modo; ex. gr. *necesse est hominem esse animal: hominem esse animal*, est dictum, et *necesse est* modus. Dictum est subjectum, et modus prædicatum; nam quod cohæret cum copulâ est prædicatum, sed modus cohæret cum copulâ; propositio ergo efferri debet, *hominem esse animal est necesse*.

PART II.—CHAP. I.

THE second operation of the understanding is *judgment*, which is defined—the affirmation or negation of one idea about another. Judgment expressed in words is called an *enunciation*, and more frequently a *proposition*. A proposition therefore is the affirmation or negation of one term about another; and it is either *simple* or *compound*. A simple proposition is that which cannot be resolved into several; as *Man is an animal*. A compound proposition is that which can.¹

A simple proposition consists of two parts, the *subject* and *predicate*. The subject is that about which something is affirmed or denied; the predicate, that which is affirmed or denied of the subject. Again, the predicate consists of two parts, the *copula* and *res copulata*. For instance, in the proposition *Man is an animal*, the term *Man* is the subject, *is* the copula, and *animal* the res copulata. But it is to be remarked, that the res copulata alone, without the copula, is commonly called the predicate, and by some the *attribute*.²

Logicians acknowledge no verb in a proposition but the verb substantive; and if any other occur, they resolve it into the verb substantive and a participle of the verb: as in the proposition *A man runs*, the predicate *runs* is resolved into—*is a running thing*.

The subject and predicate are to be distinguished not by

the position of the terms, but by the meaning of the sentence.

Simple propositions are divided into *modal* and *pure*. A modal proposition is that in which there occurs one of the four modes—it is *necessary*, *impossible*, *possible*, *contingent*. A pure proposition is that in which none of them occurs.

A modal proposition consists of the *dictum* and *modus*. For instance, in the proposition, *it is necessary that a man should be an animal*;—*that a man should be an animal* is the dictum, and *necessary* is the modus. The dictum is the subject, and the modus is the predicate; for the modus is connected with the copula, and what is so connected is the predicate. The proposition therefore ought to be expressed—*that a man should be an animal is necessary*.³

COMMENTARY.—PART II.—CHAP. I.

WE have hitherto considered the first faculty of the human mind, called perception, or simple apprehension; whereby we come to be furnished with ideas. We have treated of different kinds of ideas, as they are particular or general,—ideas of individual things, or abstract ideas of sorts of things. We have observed a corresponding difference in words or terms, as they are singular or universal. We have also taken a slight view of two divisions, which the old Logicians largely insisted on: the one, that by which they arranged the multitude of things, of which we have any ideas, into ten classes, called predicaments or categories; the other, that by which they distinguished all the assertions we can make about anything into five classes, called predicables. The latter division seems to be misplaced, in being introduced into the first part of Logic; as it should more properly follow the doctrine of propositions.

We now consider the mind, as not only furnished with ideas, each of which it perceives; but as observing different ideas together, and perceiving some relation of agreement or disagreement between them: and this, by the second

intellectual faculty, called *Judgment*. When such a mental assertion is expressed in words, we have a *proposition*, or "an affirmation or negation of one term about another;" which is *simple*, if it cannot be resolved into several propositions; *compound*, if it can.

That term in a simple proposition, about which the assertion is made, is called the *subject*; that which contains the assertion made about the subject, is called the *predicate*. And these two parts of a simple proposition are to be distinguished by the meaning of the sentence, not by the order of the terms; this being variable. Thus, when I say—*Sweet is the breath of morn*, you may perceive that I make an assertion about *the breath of morn*; which therefore is the subject of the proposition, though expressed after the predicate.

In the predicate, or thing asserted about the *breath of morn*,—namely, that it *is sweet*,—the verb substantive *is* we sometimes distinguish by the name of *copula*; and the remainder of the predicate,—namely, *sweet*, or a *sweet thing*,—is then called the *res copulata*. If no part of the verb substantive appear in the predicate, the verb which does appear is resolved into the verb substantive and its participle. Thus: *no brute reasons*—is resolved into—*no brute is a reasoning creature*.

And here you need to observe, that a proposition is not the less a *simple* proposition, because either its subject or its predicate happens to be expressed by ever so many words. For instance, the proposition—*all creatures endued with reason are accountable for their actions*—is as much a *simple* proposition, as *all men are animals*; because the one cannot, any more than the other, be resolved into several propositions.

Observe also, that one thing which has contributed to increase the popular prejudice against the usefulness of the Art of Logic, is the trifling nature of the examples given in the compendium, to illustrate the different kinds of propositions. But this arose, from the wish of the compiler to facilitate the study to younger students, by giving examples in which the subjects and predicates are expressed by single terms: and the rules and principles, which may at first be thus best illustrated, are really applicable to propositions the most important. Indeed, a useful *Praxis* of this kind

is among the desiderata in the academic course of instruction.

Of things which are, some are so that they cannot be otherwise: others are so that they yet might be otherwise. Of propositions relating to the former, the *matter* is said to be *necessary*; of propositions relating to the latter, *contingent*. In like manner, of things that are not, some not only are not, but cannot be; others are not indeed, but yet might be. And the *matter* of propositions, relating to the former, is said to be *impossible*; of propositions relating to the latter, *possible*. Thus for instance: greyhounds are dogs, and cannot but be so: a particular greyhound is your property, but might not be so; greyhounds do not fly, and cannot; a particular greyhound does not belong to me, but then it might.

Now propositions, which merely assert that such and such things are or are not, are called *pure*; but propositions, which assert the manner in which things are or are not (according to any of the four divisions I have mentioned,) are called *modal*.

In such a proposition, the part which expresses the manner of the being or not being of the thing, (as necessary, contingent, impossible, or possible,) is called the *modus*; and the remainder of the proposition is called the *dictum*. And the latter of these is the subject of the proposition; the former, the predicate. For when I say, *it is impossible that greyhounds should fly*, I assert about *greyhound's flying*, that *it is impossible*. This latter therefore, the *modus*, is the predicate of the proposition: which we thus infer from the general rule, before given, for distinguishing the subject and predicate of a proposition; without having recourse to the circumstance of the *modus* being connected with the *copula*, and therefore being the *res copulata*.

Observe that, although the old Logicians seem to have acknowledged no proposition as a modal one, unless some of the particular expressions mentioned as the four modes occur in it; yet there are really other similar expressions, which may with equal reason be considered as modes, and will equally constitute a modal proposition. Thus—*it is probable that it will rain to-day*—or—*it is certain that it did not rain yesterday*, I would consider as modal propositions; in which *its raining to-day*, or *not raining yesterday*, are the

dicta or subjects, about which I assert that the one will *probably* be, and that the other *certainly* has been.

To consider whether these expressions are only verbally different from the former modes acknowledged by the old logicians, or essentially distinct from them, would be an enquiry more subtle than important. It is more important to observe, that in all such propositions, the *mode* being the thing asserted about the *dictum*, the proposition is subject to falsehood, although it would be true if the mode were omitted, and the proposition turned into a *pure* one.

And it is of the more consequence that you should attend to this, because many inaccurate reasoners are apt to admit the truth of a proposition expressed *modally*, on account of the acknowledged truth of a corresponding proposition expressed *purely*; or to infer the falsehood of the latter, from the acknowledged falsehood of the former.

Were I indeed writing a new system of Logic, and not commenting on an old, I should be disposed to refer most (if not all) modal propositions, to the class of *compound* propositions.

[NOTES—PART II.—CHAP. I.:—

1. This definition of judgment excludes compound propositions; it would be better defined, the affirmation or negation of one or more ideas about one or more.

2. A proposition is defined logically, "a sentence indicative;" that is, affirming or denying (this excludes commands and questions), "sentence" being the genus, and "indicative" the difference; with regard to the matter, its property is to be *true* or *false*.—WHATELEY.

3. The name of the substantive seems to have been applied to the verb *to be*, properly, when used to imply that the subject is contained under the predicate in the predicament; it was thence secondarily applied to the same verb when expressive of any logical agreement.—THYNNE.

4. Mode is to be carefully distinguished from matter. Mode is an affection of the Copula, and depends on the assertion. Matter is an affection of the terms, and depends not on the assertion, but on the actual relation of the things spoken of.—THYNNE.

QUESTIONS:—

What is judgment?—What is it expressed in words?—How many species of propositions?—What is a simple proposition?—What do you mean by a compound proposition?—Of how many parts does a simple proposition consist?—Is not the predicate of a

more complex nature than the subject?—Of how many parts does the predicate consist?—What other name has the “*res copulata*” got?—What verb do logicians admit?—How do they treat all other verbs?—How are the subject and predicate to be distinguished?—How many divisions are there of simple propositions?—What is a modal proposition?—What is a pure proposition?—How do they differ?—We may not infer the truth of a modal proposition from the acknowledged truth of its *dictum*—why?—Why is *modus* the predicate?]

CAPUT II.

SINGULARUM propositionum simplicium affectiones sunt, *Quantitas* et *Qualitas*. *Quantitas* est universalitas, vel particularitas. Ratione quantitatis dividuntur propositiones in *universales*, *particulares*, *indefinitas*, et *singulares*. *Universalis* est in quâ subjectum est terminus universalis in totâ extensione sumptus. Hoc fit cum subjecto additur nota universalitatis, *omnis*, *nullus*, &c. ut, *omnis homo est animal*.

Particularis est in quâ subjectum est terminus universalis secundum partem tantum extensionis suæ sumptus. Hoc fit additione notæ incertæ partis, *aliquis*, *quidam*, &c. ut, *aliquis homo est justus*.

Indefinita est cujus subjectum est terminus universalis, cui nulla additur quantitatis nota, ut, *Homo vivit*.

Singularis, cujus subjectum est terminus singularis, ut, *Socrates fuit sapiens*. Pro singulari quoque habetur propositio quævis, cujus subjectum est terminus collectivus, ut, *exercitus, populus*, &c.

Propositiones indefinitas Logici reducunt ad universales in materiâ necessariâ, ut, *Angeli sunt incorporei*, et ad particulares in materiâ contingentî, ut, *miles castra munit*. Singulares verò semper reducunt ad universales, quia earum subjecta sumuntur in totâ suâ extensione: omnem itaque propositionem ponunt esse universalem, vel particularem.

Universalitas verò propositionis est duplex, *Metaphysica*

et *Moralis*. Propositio metaphysicè universalis est, quæ nullam omnino admittit exceptionem, ut, *omnis homo est animal*. Moraliter universalis, quæ aliquas admittit exceptiones, ut, *omnes homines suam reipublicæ utilitati præponunt*.

In priori exemplo prædicatum omnibus individuis subjecti convenit sine exceptione; exinde ergo deduci potest conclusio vel particularis, ut, *aliquis homo est animal*; vel singularis, ut, *Petrus est animal* (ut infra plenius dicetur): in posteriori prædicatum convenit plerisque individuis subjecti, sed non omnibus; exinde ergo deduci potest conclusio particularis, ut, *aliquis homo suam reipublicæ utilitati præponit*; non verò singularis, ut, *Aristides suam reipublicæ utilitati præponit*; nam, subjectum singulare potest esse inter individua, quibus non convenit prædicatum.

CHAP. II.

THE affections of simple propositions,¹ taken separately, are *quantity* and *quality*. Quantity is either universality or particularity; and with respect to their quantity, propositions are divided into universal, particular, indefinite, and singular.

An *universal* proposition is that in which the subject is an universal term taken in its whole extension.² This is the case, when there is added to the subject a note of universality, *all*, *none*, &c., as, *every man is an animal*.³

A *particular* proposition is that in which the subject is an universal term, taken only in part of its extension.⁴ This is done by the addition of a note of uncertain quantity, *some*, *certain*, &c., as *some men are just*.

An *indefinite* proposition is that whose subject is an universal term, without the addition of any note of quantity; as, *man lives*.

A *singular* proposition is that whose subject is a singular term; as, *Socrates was a wise man*. Any proposition also is considered as a singular, whose subject is a collective term; as, *an army, a people, &c.*

Indefinite propositions Logicians reduce to the class of universals in necessary matter; as, *Angels are incorporeal*: and to the class of particulars in contingent matter; as, *soldiers fortify camps*. But singular propositions they always reduce to the class of universals, because their subjects are taken in their whole extension. Therefore they lay it down that every proposition is either universal or particular.

The universality of a proposition is twofold, *metaphysical* and *moral*. A proposition metaphysically universal is that which admits of no exception at all: as *every man is an animal*. A proposition morally universal is that which admits of some exceptions: as, *all men prefer their own interest to the public*. In the former example the predicate agrees with all the individuals of the subject without exception; and therefore we may deduce from it either a particular conclusion, as *some men are animals*; or a singular, as, *Peter is an animal*; of which more hereafter. In the latter example the predicate agrees with most of the individuals of the subject, but not with all. From it therefore we may deduce a particular conclusion, as, *some men prefer their own interest to the public*; but not a singular, as, *Aristides prefers his own interest to the public*: for the singular subject may be among the individuals, with which the predicate does not agree.⁵

COMMENTARY.—CHAP. II.

I HAVE known many young students ignorant of the meaning of the first sentence in this chapter, from inatten-

tion to the force of the Latin word *singularum*. Its meaning is this: any simple proposition, taken *by itself*, has two affections or characters; it has a certain *quantity*, and a certain *quality*. (The fifth and following chapters will treat of certain affections, or characters, that propositions have, when they are not taken each by itself, but are *compared together*.)

The quantity of propositions being twofold, either *universality* or *particularity*, it is absurd to divide propositions, according to their quantity, into four kinds. This division also should be twofold, corresponding to the two kinds of quantity. And thus we shall say that propositions, divided according to their quantity, are either universal or particular: and that an universal proposition is one, in which the subject is taken in its whole extension; a particular, one in which the subject is taken in but a part of its extension.

Thus, the propositions called *indefinites* and *singulars* will always be reducible to one or other of these classes: a singular proposition, always to the class of universals; because the singular term, its subject, must be taken in its whole extension, wherever it occurs, that extension (as we have shown) consisting of but one individual; and indefinite propositions—(in which no note of quantity is expressly annexed to the subject)—either to the class of universals or particulars, according as we may or may not, with truth, insert a note of universal quantity; or according as that, which is asserted indefinitely of the universal term, is or is not true of all the individuals, included in the extension of that term.

If propositions be divided into the four kinds, universal, particular, indefinite, and singular,—then the definition of each must run so, as that the two latter shall not be reducible to the former; and therefore the definitions of an universal and particular proposition must then include, both the distinguishing character of their subjects, as universal terms, and the addition of a note of universal or particular quantity to their subjects. It appears, therefore, that the definitions, given in the compendium, are not even rightly adapted to the inaccurate division which is employed.

When it is said, that a proposition is considered as a singular proposition, if its subject be a collective term,—as an *army*, a *nation*;—we must understand that the collective

term is taken in a sense, restricted to some individual body, called by that name; as, the French army, or the British nation. Otherwise, the proposition will not belong to the class of singulars.

When universal propositions are divided into *metaphysically* and *morally* universal; it is to be observed, that the latter are propositions inaccurately expressed, or not strictly true. For they assert something about the subject, taken in its whole extension, which is not true of all the individuals in that extension, without some exceptions. Thus, when I say that *all mothers love their children*, the proposition may be called morally universal, but it is really false; as some mothers have been known, who did not love their children. And hence, from such a proposition I cannot infer, that the thing asserted is true of any particular individual, in the extension of the subject; because that individual may be among the exceptions; though it be admitted as true of almost all of them.

Inaccurate speakers and reasoners deal much in propositions of this class: and they ought to be met, in argument, with an absolute denial of their assertion; till it be so modified in its expressions, as to become strictly true.

[NOTES—CHAP. II. :—

1. There are two affections of propositions. One here, of propositions regarded severally, which sort may be called *absolute affection*; and the other of propositions compared together, and is named *relative affection*.

2. This definition is not expressed with sufficient precision to exclude indefinites in necessary and in possible matter. It may be amended thus: "An universal proposition is one in which the subject is an universal term, *stated* to be taken in its whole extension."

3. The signs of universality are, *every*, *each*, and *all*, when used distributively.

4. This definition would be better thus expressed: "A particular proposition is one in which the subject is stated to be used in an uncertain part of its extension."

5. A collective proposition may be defined: "That in which the subject is used in a determinate part of its extension." The four classes may be reduced to two, namely, *universals* and *particulars*.

QUESTIONS :—

What do you mean by the affections of propositions?—What are the *absolute* affections?—Why do you call them *absolute*?—What

determines the quantity of a proposition?—How are propositions divided with respect to quantity?—Name them.—What rules of division does this classification violate?—How many fold is the universality of propositions?—Why cannot a singular be derived from a proposition morally universal?]

CAPUT III.

QUALITAS propositionis est affirmatio vel negatio. Ratione qualitatis dividuntur propositiones in *affirmantes*, et *negantes*. Affirmans est in quâ dicitur prædicatum subjecto convenire, ut, *homo est animal*. Negans, in quâ dicitur prædicatum subjecto non convenire, ut, *homo non est lapis*.

Cum dicitur prædicatum subjecto convenire, intelligitur totam comprehensionem prædicati contineri in comprehensione subjecti, et inde (page 13,) totam extensionem quam habet subjectum in illâ propositione, contineri in extensione prædicati.

Et cum dicitur prædicatum subjecto non convenire, intelligitur totam comprehensionem prædicati non contineri in comprehensione subjecti, vel alicujus partis ejus; et inde totam extensionem, quam habet subjectum in illâ propositione, excludi ex tota extensione prædicati.

Sed ut comprehensio prædicati non contineatur in comprehensione subjecti, non necesse est omnes Ideas simpliciores esse diversas: sufficit si una sit in comprehensione prædicati, quæ non est in comprehensione subjecti, vel alicujus partis ejus.

Si prædicatum omnibus individuís subjecti conveniat, *materia* propositionis appellatur *necessaria*: si ab omnibus discrepet, *impossibilis*: et si quibusdam conveniat, non verò omnibus, appellatur *contingens*.

Ratione quantitatis et qualitatis conjunctim dividuntur propositiones in quatuor species, quæ vocalibus A, E, I, O,

denotantur. A, denotat universalem affirmantem, ut, *omnis homo est animal*. E, Universalem negantem, ut, *nullus homo est lapis*. I, Particularem affirmantem, ut, *aliquis homo est justus*. O, Particularem negantem, ut, *aliquis homo non est justus*.

Est verò et alia qualitas propositionum scil. *veritas* et *falsitas*. Hujus ratione dividuntur propositiones in veras et falsas. Vera est in quâ dicuntur res convenire quæ conveniunt, vel discrepare quæ discrepant, ut, *homo est animal*; *homo non est lapis*. Falsa, in quâ dicuntur res convenire quæ discrepant, vel discrepare quæ conveniunt, ut, *homo est lapis*; *homo non est animal*.

Veritas autem est vel Logica vel Ethica. *Veritas Logica* est convenientia orationis cum rebus.

Ethica, convenientia orationis cum mentis judicio.

Si mens de rebus rectè judicet, eædem propositiones erunt Logicè et Ethicè veræ; eædem falsæ. Si vero mens non rectè judicet, propositio Ethicè vera erit Logicè falsa, et Logicè vera erit Ethicè falsa.

CHAP. III.

THE quality of a proposition is either affirmation or negation. And in respect of quality, propositions are divided into *affirmative* or *negative*. An affirmative is that in which the predicate is said to agree with the subject; as, *man is an animal*. A negative is that in which the predicate is said not to agree with the subject; as, *man is not a stone*.

When the predicate is said to agree with the subject, we understand that the whole comprehension of the predicate is contained in the comprehension of the subject, and therefore (page 13,) that the whole extension which the subject has in that proposition, is contained in the extension of the predicate.

And when it is said that the predicate does not agree with the subject, we understand that the whole comprehension of the predicate is not contained in the comprehension of the subject, or of any part of it; and therefore that the whole extension which the subject has in that proposition is excluded from the whole extension of the predicate.

But in order that the comprehension of the predicate be not contained in the comprehension of the subject, it is not necessary that all the simple ideas be different; it is sufficient if there be one in the comprehension of the predicate, which is not in the comprehension of the subject or of any part of it.

If the predicate agree with all the individuals of the subject, the matter of the proposition is called *necessary*; if it disagree with all, *impossible*; and if it agree with some, but not with all, it is called *contingent*.

With respect to quantity and quality together, propositions are divided into four species, designated by the vowels A, E, I, O. A, denotes an universal affirmative; as, *all men are animals*. E, an universal negative; as, *no man is a stone*. I, a particular affirmative; as, *some men are just*. O, a particular negative; as, *some men are not just*.

But there is also another quality of propositions, namely, *truth* and *falsehood*. With respect to this, propositions are divided into true and false. A true proposition is that in which things that do agree are said to agree, or that do disagree are said to disagree: as, *men are animals*; *men are not stones*. A false proposition is that in which things that disagree are said to agree; or things that agree are said to disagree; as, *men are stones*; *men are not animals*.

But truth is either *logical* or *ethical*. Logical truth is the agreement of our speech with the reality of things. Ethical truth, its agreement with the judgment of the mind. If the mind judge aright about things, the same propositions will

be both logically and ethically true or false. If the mind judge not aright, the proposition that is ethically true will be logically false; and the proposition that is logically true will be ethically false.

COMMENTARY.—CHAP. III.

EVERY simple proposition considered by itself has, besides a certain quantity, a certain *quality* also; and, in this respect, is *affirmative*, or *negative*.

Observe, that it is not the actual agreement or disagreement of the predicate with the subject, which determines the quality of the proposition to be affirmative or negative; but the assertion of its agreement or disagreement. In a false affirmative, for instance, the predicate really disagrees with the subject; yet the proposition is nevertheless affirmative, because it is said to agree with the subject.

Let us now see what we mean to assert, when we *affirm* the predicate of the subject, or assert its agreement with the subject; when we say, for instance, that *all greyhounds are dogs*. Do we not mean to assert, that every *greyhound* possesses all the characters, which make up the complex idea called *dog*? or, that all the attributes, which enter into the comprehension of the word *dog*, belong to every individual included in the extension of the word *greyhound*; and, therefore, that all those individuals may be called *dogs*; or, are included in the extension of the word *dog*.

Thus again—when I say, *some dogs are greyhounds*, I mean to say, that there are some dogs—some individuals included in the extension of the subject *dogs*—which possess all the characters included in the complex idea called a *greyhound*, or, to whom all the attributes, that make up its comprehension, belong; and which therefore may be called *greyhounds*, or, are included in the extension of the word *greyhound*.

Accordingly, we cannot truly assert that *all dogs are greyhounds*; because *all dogs* do not possess all the attributes, which enter into the comprehension of the word *greyhound*, or which make up the complex notion signified by that term.

Let us now see what we mean, when we *deny* the predicate

the subject or assert its disagreement with the subject; when we say, for instance, that *some dogs are not greyhounds*. Do we not mean to say that there are some individuals, which may be called *dogs*, (or, are included in the extension of the word *dog*,) that do not possess all the attributes, included in the comprehension of the word *greyhound*? and which, therefore, cannot be called *greyhounds*; or, are not among any of the individuals that may be called *greyhounds*.

Accordingly, we cannot truly say, that *some greyhounds are not dogs*; because there is no *greyhound* that does not possess all the attributes denoted by the word *dog*. And it is obvious that, if there be any *one* attribute included in the comprehension of the predicate, which does not belong to the individuals about which that term is predicated; the predicate may be truly denied of those individuals, and they will not be found among any of the individuals, to which the predicate is applicable: inasmuch as we have before shown, that a term is applicable only to those individuals, which possess *every one* of the attributes included in its comprehension.

A clear conception of this subject is absolutely needful for understanding aright the subsequent matter of this book; and, indeed, is necessary in order to discern clearly the precise meaning of any simple proposition.

You may perceive that I have departed a little from the explanation of the matter given in the compendium. Those who abide by that explanation, will find that it cannot be maintained, without considering many propositions as merely identical, which really are not.

But I must here make an observation, the importance of which you will find hereafter, in simplifying many rules of Logic. It is this; that every negative proposition may be considered, at pleasure, as an affirmative; and v. v. If you wish to treat a negative proposition as an affirmative, you have only to consider the negative particle as connected, not with the *copula*, but with the *res copulata*.

Thus, when I say, *some animals are not rational*; if *rational* be considered as the *res copulata*, the proposition is negative. But I may conceive *not-rational* to be the *res copulata*; and then the proposition is affirmative; just as much as the synonymous proposition, *some animals are irrational*. Thus again, the negative proposition—*no irrational*

being is accountable for his actions—may be expressed affirmatively;—*all irrational beings are—not-accountable* (or *unaccountable*) *for their actions*. To this observation I shall have frequent occasion to call your attention.

The definitions given in this chapter, of true and false propositions, properly belong to one species of truth and falsehood; namely Logical. It is plain that, if the judgment of the mind be agreeable to the reality of things, Logical and Ethical truth will coincide. But if not, the proposition that is logically true, or agreeable to the reality of things, will be ethically false, or contrary to the judgment of the mind; and v. v. So that men may be telling *lies*, or intending to speak falsely, when they are speaking what is logically true.

[NOTES—PART II.—CHAP. III. :—

1. An affirmative proposition is one whose *copula* is affirmative, as “birds fly.” A negative proposition is one whose *copula* is negative, as “a man is not perfect.”—WHATELEY.

2. When a term is taken in part of its extension, it may be understood to have a greater comprehension than when taken in its whole extension.—LARDNER.

3. If an attribute, or collection of attributes, were observed in all the individuals of a class, it was deemed necessary or essential to that class; if in none, of individuals impossible; if in some only, contingent. Thus, with all their boasted reminiscence, the Philosophers were obliged to consult experience, in order to decide what attributes were essential, repugnant, or accidental.—THYNNE.

QUESTIONS :—

What do you mean by the quality of a proposition?—What do you mean by the matter of a proposition?—How many fold is the quality?—How many is the species of matter?—What is meant by the predicate agreeing with the subject?—What of its not agreeing?—What is sufficient for this non-agreement?—What inconsistency is there in Dr. Murray's dividing propositions, with respect to their quantity, into four kinds? There is another two-fold quality of propositions?—What is necessary matter?—What is impossible matter?—What is contingent matter?—What is possible matter?—What is a true proposition?—What is a false proposition?—How many kinds of truth are there?—What impropriety is there in dividing truth and falsehood into logical and ethical?—If the mind judge right, what inferences can be made from either logical or ethical truth of propositions?—If the mind judge wrong, what inferences can be made from them?

CAPUT IV.

UT omnis propositio, ita quoque et omnis propositionis termini habere dicuntur quantitatem: et terminus propositionis est *universalis*, si in eâ sumatur secundum totam suam extensionem: *particularis*, si non.

Quantitas subjecti est eadem cum quantitate propositionis; i. e. in omni propositione universali, subjectum est universale; et in omni particulari, particulare: quæ ex earum definitionibus constant.

Quantitas prædicati pendet a qualitate propositionis; in omni affirmativâ propositione, prædicatum est particulare; in omni negativâ est universale.

Nam in affirmativâ propositione dicitur solummodò prædicatum in suâ extensione continere subjectum, exinde verò inferri nequit prædicatum nihil præterea continere, i. e. exinde inferri nequit universalitas prædicati; sed ea sola quantitas attribuenda est termino, quam ex oratione eum habere inferri potest, ideoque universalitas nunquam attribuenda est prædicato propositionis affirmativæ: hæc ita se habent, sive tota extensio prædicati major sit extensione subjecti, ut, *omnis homo est animal bipes*; sive non, ut, *omnis homo est animal rationale*.

In priori exemplo prædicatum est reipsâ particulare, quia pars tantum extensionis ejus in illâ propositione intelligitur, ea scil. quæ convenit subjecto; at in posteriori, quamvis prædicatum sit reverâ universale, necesse tamen est ut pro particulari habeatur, quia nihil est in propositione unde deduci possit ejus universalitas.

At in propositione negativâ, extensio quam habet subjectum in illâ propositione excluditur ex totâ extensione prædicati, (page 42,) ideoque prædicatum sumitur in tota sua extensione.

Observandum est, terminos, quorum tota extensio est

eadem, ut *homo et animal rationale*, appellari *reciprocus*; et eorum utrumvis posse de altero universaliter prædicari.

CHAP. IV.

As every proposition, so also the terms of every proposition, are said to have a certain quantity: and a term of a proposition is universal, if it be taken in that proposition according to its whole extension; particular, if it be not.

The quantity of the subject is the same with the quantity of the proposition; i. e. in every universal proposition the subject is universal, and particular in every particular proposition; as is plain from their definitions.

The quantity of the predicate depends on the quality of the proposition.¹ In every affirmative proposition the predicate is particular; in every negative, universal. For in an affirmative proposition it is only said that the predicate contains the subject in its extension; but we cannot thence infer that the predicate contains nothing else. Now we are to attribute to a term that quantity alone, which we may infer that it has from what is expressed: and therefore universality can never be attributed to the predicate of an affirmative proposition. This is so, whether the whole extension of the predicate be greater than the extension of the subject, as in the proposition—*every man is a two-legged animal*; or be not, as in the proposition—*every man is a rational animal*. In the former example the predicate is really particular, because only part of its extension is understood in that proposition, namely, that part which agrees with the subject; but in the latter example, although the predicate be really universal, yet we must consider it as particular, because there is nothing in the proposition from which its universality can be deduced.

But in a negative proposition, the extension, which the

subject has in it, is excluded from the whole extension of the predicate, (see page 42,) and therefore the predicate is taken in its entire extension.

It is to be observed, that terms whose entire extension is the same, are called *reciprocal* terms,² as *man* and *rational animal*: and that each of them may be universally predicated of the other.³

COMMENTARY.—CHAP. IV.

ANY term in a proposition is said to be universal, if it be there taken in its whole extension; or, in other words, if there be something asserted about all the individuals, to which it may be applied. If there be nothing asserted in the proposition, about the entire extension of the term, then the term is said to be particular.

You must, therefore, distinguish this sense, in which we speak of a term's being universal, from the sense in which we speak of some terms being universal, as distinguished from singular terms. And it is plain that, in the sense in which we now use the word, every singular term must (wherever it occurs) be universal, or taken in its whole extension; that consisting of but one individual.

It is as plain, (from the definitions that we gave, in the penultimate chapter, of an universal and particular proposition,) that the subject of every universal proposition is universal, or taken in its entire extension; and the subject of every particular proposition is particular, or taken in but part of its extension.

It appears also, (from the observation in the last chapter, upon affirmative and negative propositions,) that the predicates of the affirmative are particular, and of the negative universal. For in an affirmative proposition, what is asserted about the predicate? Only this; that the subject (or the individuals about which the predicate is affirmed) is contained in the extension of the predicate, or is among the individuals to which the predicate may be applied. But this is not asserting any thing about *all* those individuals, or about its entire extension; and therefore the predicate is

not universal, but particular. And this is equally the case, whether the predicate really contain more in its extension than the subject, or not. For even in the latter case, it is only *asserted*, that the subject is included in its extension; which is not an assertion that nothing more is included in it.

The fifth paragraph of this chapter, in the compendium, is very inaccurate: and may be safely omitted, if you attend to what has been said above of the sense in which a term is said to be particular.

In a negative proposition it is asserted, that the subject (or the individuals about which the predicate is denied) is not contained among *any* of the individuals to which the predicate may be applied. There is therefore an assertion about all those individuals, or about the entire extension of the predicate: i. e. the predicate is universal.

Thus when I say, that *some dogs are greyhounds*, I do not assert anything about *all greyhounds*. I only assert that some dogs are among the objects which may be called greyhounds: just as when I say that *all greyhounds are dogs*, I only assert that all greyhounds are among the objects that may be called dogs. In either of these instances, therefore, nothing being *asserted* about the entire extension of the predicates, they are to be considered as particular.

But when I say, that *some dogs are not greyhounds*, I assert that some dogs are not among *any* of the objects which may be called greyhounds. Here I make an assertion about all those objects, or about the whole extension of the predicate; which is therefore universal.

It is plain, from what has been said in the second chapter of the first part, that *reciprocal* terms (or those whose entire extension is the same) must have also the same comprehension; or be what we call *synonymous* terms.

[NOTES—PART II.—CHAP IV. :—

1. The distribution or non-distribution of the predicate is entirely independent of the quantity of the proposition, nor are the signs "all" and "some" ever affixed to the predicate; because its distribution depends upon and is indicated by the *quality* of the proposition—i. e., its being affirmative or negative, it being an *universal rule*, that the predicate of a negative proposition is distributed, and of an affirmative, undistributed.—WHALEY.

2. Reciprocal terms are more usually called synonymous.

3. That a term should be universally predicable of another, does not mean that, as predicate, it is to be universally assumed, but that the agreement is to be assumed as universal.—THYNNE.

QUESTIONS:—

On what does the quantity of the subject of a proposition depend?—On what the predicate?—What quantity has the predicate of an affirmative proposition?—What quantity has the predicate of a negative?—What do you mean by reciprocal terms?—How are reciprocal terms formed?

CAPUT V.

PROPOSITIONUM affectiones *relatæ* sunt quæ pluribus propositionibus inter se comparatis conveniunt, et sunt *subalternatio*, *conversio*, et *oppositio*. Harum cognitio syllogismorum doctrinæ inservit; subalternatio, in pluribus conclusionibus deducendis ex iisdem præmissis: oppositio in modis imperfectis reducendis ad perfectos; et conversio in utrisque.

Subalternatio est deductio propositionis particularis vel singularis ab universali. Propositio universalis dicitur *subalternans*, et particularis vel singularis quæ ab eâ deducitur, *subalterna*.

De illatione veritatis seu falsitatis unius propositionis ab aliâ, hæc sunt axiomata.

1°. Veritas universalis infert veritatem particularis: ex. gr. si verum sit *omnem hominem esse animal*, verum est *aliquem hominem esse animal*; nam in affirmativis propositionibus, si prædicatum contineat totam extensionem subjecti, continet partem: et in negativis si excludat totam, excludit partem.

2°. Veritas particularis non infert veritatem universalis: nam quamvis prædicatum contineat partem extensionis subjecti, possibile tamen est non continere totam: sic verum esse potest *aliquem hominem esse justum*, et falsum *omnem hominem esse justum*.

De singulis terminis quoque propositionis statuendum est, nullum in deductione quâvis mutari posse a particulari in universalem, i. e. ut (loquuntur Logici) non valere argumentum a particulari ad universale: nam si terminus quivis sit particularis, pars tantum ejus dicitur alteri termino convenire, vel ab eo discrepare: de reliquâ ergo parte nihil inferri potest, ergo nec de toto.

3°. Falsitas particularis infert falsitatem universalis: nam si falsum sit prædicatum continere partem extensionis subjecti, falsum est continere totam; ex. gr. si falsum sit *aliquem hominem esse lapidem*, falsum est *omnes homines esse lapides*.

4°. Falsitas universalis non infert falsitatem particularis: nam quamvis falsum sit prædicatum continere partem; ex. gr. quamvis falsum sit *omnem hominem esse justum*, verum tamen esse potest *aliquem hominem esse justum*.

Hæc quatuor axiomata ad duo possunt reduci; nam tertium continetur in primo, et quartum in secundo: sed perspicuitatis gratiâ separatim traduntur.

CHAP. V.

THE *relative* affections of propositions are those which belong to several propositions compared together: and they are *subalternation*, *conversion*, and *opposition*. The knowledge of these is subservient to the doctrine of syllogisms; *subalternation*, in deducing several conclusions from the same premises; *opposition*, in reducing imperfect modes to perfect: and *conversion*, in both.

SUBALTERNATION is the deduction of a particular or singular proposition from an universal.¹ The universal proposition is called the *subalternans*; and the particular or singular which is deduced from it, the *subalternæ*.

About inferring the truth or falsehood of one of these

propositions from the other, there are the following axioms.

1. The truth of the universal infers the truth of the particular: for instance, if it be true that *every man is an animal*, it is true that *some man is an animal*. For in affirmative propositions, if the predicate contain the whole extension of the subject, it contains a part; and in negative propositions, if it exclude the whole, it excludes a part.

2. The truth of the particular does not infer the truth of the universal. For though the predicate contain [or exclude] part of the extension of the subject, it is yet possible that it may not contain [or exclude] the whole. Thus, it may be true that *some men are just*, and yet false that all men are just.

Concerning the several terms also of a proposition, it is to be laid down, that in any inference no term can be changed from a particular to an universal; or, as Logicians express it, that an argument *a particulari ad universale* is invalid. For if any term be particular, part of it only is said to agree or disagree with the other term. About the remaining part of it therefore nothing can be inferred; nor therefore about the whole.

3. The falsehood of the particular infers the falsehood of the universal. For, if it be false that the predicate contains [or excludes] any part of the extension of the subject, it is false that it contains [or excludes] the whole; for instance, if it be false that *some man is a stone*, it must be false that *all men are stones*.

4. The falsehood of the universal does not infer the falsehood of the particular. For, though it be false that the predicate contains [or excludes] the whole extension of the subject, yet it may contain [or exclude] a part: for instance, though it be false that *all men are just*, it may yet be true that *some men are just*.

These four axioms may be reduced to two; for the third is contained in the first, and the fourth in the second; but for the sake of clearness they are delivered separately.²

COMMENTARY.—CHAP. V.

HAVING in the second and third chapters, treated of the two affections, or characters, that belong to every simple proposition considered by *itself*; we now proceed to another class of affections, called *relative*, belonging to several propositions, *compared together*. The use of these will appear in the third part.

The first of them is *subalternation*; or, the deduction of a particular or singular proposition from an universal, having the same subject and the same predicate. The necessity of adding this last circumstance to the definition, will appear in the next chapter.

Here, the two propositions compared together are, the one an universal proposition, called the *subalternans*; the other deduced from the former, and called the *subalternæ*,—a particular or singular proposition, with the same subject and the same predicate.

Thus, from the universal proposition *all greyhounds are dogs*, I may by subalternation, infer that *some greyhounds are dogs*, or that *such an individual greyhound is a dog*. But observe that, to warrant my inferring a *singular* subalternæ, the subalternans must be *metaphysically* universal. See the latter part of the second chapter.

Now, where there are two propositions thus related, we have to consider, how far we may infer the truth or falsehood of one of them, from the truth or falsehood of the other. And it will appear that, from the truth of the *subalternans*, we may with certainty conclude the truth of the *subalternæ*; and consequently, from the falsehood of the *subalternæ*, may conclude the falsehood of the *subalternans*: but that, from the truth of the *subalternæ*, we cannot with certainty infer the truth of the *subalternans*; nor, therefore, the falsehood of the *subalternæ*, from the falsehood of the *subalternans*.

This appears with sufficient plainness, from considering *that, if it be true that the predicate agrees or disagrees with*

the whole of the subject, (i. e., if the *subalternans* be true,) it must be true that it agrees or disagrees with part of the subject, (i. e., the *subalterna* must be true): and therefore, if the latter be false, the former must be false. But although it be true that the predicate agrees or disagrees with part of the subject, (i. e., although the *subalterna* be true,) it may yet not be true that it agrees or disagrees with the whole of the subject, (i. e. the *subalternans* may yet be false); and therefore, though the latter be false, the former may yet be true.

Observe that, throughout the four axioms in the compendium, you are to understand by the universal and particular propositions mentioned, an universal and a particular deduced from it by *subalternation*.

And thus, it appears, that from a true *subalternans*, a false *subalterna* cannot be deduced; but that, from a false *subalternans*, a true *subalterna* may be deduced. And you are to observe, in general, that falsehood cannot follow from truth; but that truth may follow from falsehood. The manner in which I have stated the subject, may show you that the two latter axioms, in the compendium, are really included in the former.

In this chapter, a general maxim is mentioned, the meaning of which I have found mistaken by many students; namely, that an argument, a *particulari ad universale*, from a particular to an universal, is invalid. You are to understand by this, an argument—not from a particular proposition to an universal proposition—but from a term taken particularly, to the same term taken universally. In short, the meaning is this, that from a proposition asserting something about a term, taken only in part of its extension, you cannot infer anything about that term, taken in its whole extension.

[NOTES—PART. II.—CHAP. V. :—

1. The improved definition is, that “Subalternation” is the deduction of a particular or singular proposition from an universal—both, namely, the premiss and deduction, having the same subject and the same predicate.

2. The third and fourth axioms differ from the first and second in being their converses, *per contra-position*.

QUESTIONS:—

How many are the relative affections of propositions?—What are their use in respect of Syllogisms?—What is subalternation?—What is the subalternans?—What is the subalterna?—Can a singular subalterna be always deduced?—What is the first Axiom, and how is it proved?—What is the second Axiom, and how is it proved?—How is the third Axiom inferred from the first?—How is the fourth Axiom inferred from the second?—Upon what principles are these axioms founded?—What do you mean by *argumentum a particulari ad universale non valet*?—Why is the invalidity of it introduced between the second and third Axiom?]

CAPUT. VI.

CONVERSIO est transpositio subjecti in locum prædicati, et prædicati in locum subjecti, salvâ veritate. Propositio quæ convertitur, nominatur *convertenda*: et ea in quam convertitur nominatur *conversa*.

Necesse est salvam esse veritatem, quia conversa sequi debet ex convertendâ, et ex veris nihil sequitur nisi verum.

Conversionis duæ sunt præcipuæ species; *simplex* et *per accidens*.

Conversio simplex est in quâ servatur quantitas et qualitas propositionis, i. e. si propositio fuerit universalis ante conversionem, erit universalis post; vel si particularis ante, erit particularis post: et similiter de qualitate.

Conversio per accidens est in quâ, servatâ qualitate, diminuitur quantitas; hoc est, universalis mutatur in particularem; non vero affirmans in negantem, aut vice versâ.

Propositiones universales affirmantes convertuntur per accidens; universales negantes, et particulares affirmantes convertuntur simpliciter; et particulares negantes, nullo modo: i. e.

A convertitur in I.

E ————— in E.

I ————— in I.

O non convertitur.

1º. Si convertatur universalis affirmans, fiet particularis.

Nam quoniam propositio convertenda est affirmans, ejus prædicatum est particulare, (p. 41,) ergo ille terminus erit particularis in conversâ (p. 42,) sed est ejus subjectum, et proinde conversa erit particularis; ut, *omnis homo est animal*, ergo *aliquod animal est homo*: in priori propositione *animal* est particulare, ergo debet esse particulare in posteriori, ubi est subjectum, ideoque reddit eam particularem.

2°. Universalis negans convertitur in universalem negantem. Nam nulla pars extensionis subjecti continetur in extensione prædicati, (p. 45,) ergo nullum est individuum utrique termino commune, ideoque subjectum ex suâ extensione excludit totum prædicatum, et potest de eo universaliter negari; ut, *nullus homo est lapis*, ergo *nullus lapis est homo*.

3°. Particularis affirmans convertitur in particularem affirmantem. Nam propositionis convertendæ ambo termini sunt particulares (p. 53,) ergo et conversæ, (p. 59,) quoniam ergo subjectum ejus est particulare, propositio erit particularis; et quoniam prædicatum est particulare, propositio erit affirmans. Ex. gr. *aliquis homo est albus*, ergo *aliquod album est homo*.

4°. Particularis negans non convertitur; ejus enim subjectum est particulare, et si convertatur propositio, hoc subjectum fit prædicatum negativæ propositionis, et ideo universale, contra quod demonstratum fuit (p. 59).

Universalis affirmans aliquando videtur simpliciter converti, scil. si constet ex terminis reciproci: ut *omnis homo est animal rationale*, *omne animal rationale est homo*. Particularis negans quoque aliquando videtur converti, ut, *aliquis homo non est albus*, *aliquod album non est homo*. Sed in utroque casu conversio est apparens tantum, non vera; in neutro enim sequitur conversa ex convertendâ, quod ad veram conversionem requiritur.

Hisce duabus speciebus conversionis aliquando annumeratur tertia, conversio *per contrapositionem*, quæ fit cum post terminorum transpositionem, pro iis ponuntur eorum contradictiones. Hæc species præcipuè locum habet in universali affirmante, ut, *omnis homo est animal*, ergo *quod non est animal non est homo*.

CHAP. VI.

CONVERSION is the transposition of the subject into the place of the predicate, and of the predicate into the place of the subject, so as to preserve truth.¹

The proposition that is converted is called the *convertend*; and that into which it is converted is called the *converse*. It is necessary that truth should be preserved, because the converse ought to follow from the convertend, and from truth nothing follows but truth. The principal species of conversion are two, *simple* and *per accidens*.

Simple conversion is that in which the quantity and quality of the proposition are preserved: i. e. if the proposition has been universal before conversion, it shall be universal after: and so also of the quality.

Conversion *per accidens* is that in which, while the quality is preserved, the quantity is diminished: i. e. an universal proposition is changed into a particular, but not an affirmative into a negative, or vice versâ.

Universal affirmative propositions are converted, *per accidens*; universal negatives and particular affirmatives are converted *simply*: and particular negatives are not converted in either way; i. e. *A* is converted into *I*, *E* into *E*, *I* into *I*, and *O* is not converted.

1. If an universal affirmative be converted, it will become *particular*. For since the convertend is affirmative, its

predicate is particular (see page 41), and therefore that term must be particular in the converse, (see page 42); but it is its subject, and therefore the converse will be particular. E. gr. *Every man is an animal*; therefore, *Some animal is a man*. In the former proposition, *animal* is particular; and therefore it must be particular in the latter, where it is the subject, and consequently renders the proposition particular.

2. An universal negative is converted into an universal negative. For no part of the extension of the subject is contained in the extension of the predicate (see page 45); therefore there is no individual common to both terms; and consequently the subject excludes from its extension the entire predicate, and may be universally denied of it. E. gr. *No man is a stone*: therefore, *No stone is a man*.

3. A particular affirmative is converted into a particular affirmative. For both terms of the convertend are particular, (see page 53,) and therefore both terms of the converse (see page 59). Inasmuch then as its subject is particular, the proposition will be particular: and inasmuch as its predicate is particular, the proposition will be affirmative. E. gr. *Some man is white*: therefore, *Some white thing is a man*.

4. A particular negative is not converted: [i. e. either *simply* or *per accidens*.] For its subject is particular; and if the proposition be converted, the subject becomes the predicate of a negative proposition, and therefore universal; contrary to the established rule, page 59.

An universal affirmative sometimes appears to be convertible *simply*, viz. if it consist of reciprocal terms: as, *Every man is a rational animal*: *Every rational animal is a man*. A particular negative also sometimes appears to be convertible [simply]: as, *Some man is not white*: *Some white thing is not a man*. But in both these cases the con-

version is only apparent, not real; for in neither does the converse follow from the convertend, which is essential to true conversion.

Along with these two species of conversion there is sometimes reckoned a third, viz. conversion by *contra-position*; in which, after the transposition of the terms, their contradictories are substituted for them. This species takes place principally in universal affirmatives: e. gr. *Every man is an animal*: therefore, *Whatever is not an animal is not a man*.

COMMENTARY.—CHAP. VI.

THE next relative affection of propositions is *conversion*; which ought to be defined, *the deduction of one proposition from another, transposing the terms*.

Of the two propositions compared together in conversion, the one, from which we draw the inference, is called the *convertend*: and that, which we deduce from it, the *converse*.

To real conversion two things are necessary; that the terms should be transposed, and that the converse should follow by necessary inference from the convertend. And hence, according to the principle mentioned above, if the convertend be true, the converse must be true; but though the convertend be false, the converse may be true.

When we attempt to deduce from a proposition another, which does not necessarily follow, it is said that there is no *vis consequentiæ*.

We have shown, in the fourth chapter, that the predicate of every affirmative proposition is *particular*; that nothing is asserted about its entire extension. Hence, and from the observation at the close of the last chapter, it appears that the converse of every affirmative proposition must be particular, whether the convertend be universal or particular; because the predicate of the convertend must be the subject of the converse; and if we made that term universal in the converse, we should argue a *particulari ad universale*; i. e.

there would be no *vis consequentiæ*. Therefore an universal affirmative cannot be converted *simply*, or into an universal affirmative.

But that it may be converted *per accidens*, or into a particular affirmative, will appear from considering that, if the predicate agree with the whole subject as the convertend asserts, it necessarily follows that the subject agrees with part of the predicate. If *all greyhounds be dogs*, then *some dogs must be greyhounds*.

Or to prove the same thing still more clearly : if all things, that possess the characters denoted by the word *greyhound*, be among the individuals that may be called *dogs*; it follows that some things which may be called *dogs*, possess the characters denoted by the word *greyhound*, and are, therefore, among the individuals which may be called *greyhounds*.

In like manner, it may be proved that a particular affirmative may be converted into a particular affirmative. In the compendium, it is only proved, that it cannot be converted into an universal affirmative. Thus, the converse of *some dogs are greyhounds* is—(not *all greyhounds are dogs*; for this, though true, does not follow from the convertend; but) *some greyhounds are dogs*.

In an universal negative, it is asserted that there is no individual, common to the extension of both terms; for it is asserted that no one of the individuals, included in the extension of the subject, is found among any of the individuals, included in the extension of the predicate. Therefore, we may infer with certainty, that no one of the individuals, included in the extension of the predicate, is found among any of the individuals, included in the extension of the subject: i. e. we may convert it *simply*, or into an universal negative. If *no greyhound be a mastiff*, it necessarily follows, that *no mastiff is a greyhound*.

Or thus : if the predicate disagree with the entire subject, then the subject must disagree with the entire predicate; for, if it agreed with any part of the predicate, then the predicate would agree with part of the subject, as a particular affirmative may be converted simply.

We have hitherto shown, that from an agreement of the predicate with either the whole or part of the subject, we may infer an agreement of the subject with part of the

predicate ; and that from a disagreement of the predicate with the whole subject, we may infer a disagreement of the subject with the whole predicate. In such conversions, it appears that the convertend and converse are propositions of the same quality.

Now we cannot *thus* convert a particular negative. From the disagreement of the predicate with part of the subject, we cannot infer that the subject disagrees with any part of the predicate.

Thus, when I say that *some dogs are not greyhounds*, I assert that the characters of *greyhounds* disagree with some *dogs* ; but I cannot infer from this, that the characters of *dogs* disagree with any *greyhounds*, or that *some greyhounds are not dogs*. And you may perceive that, if I attempted to draw such an inference, I should argue *a particulari ad universale* ; the subject of the convertend being particular in it, and universal (or taken in its whole extension) in the converse.

But it is a great mistake to say, that a particular negative cannot be converted in any way. For it appears, from what I said towards the close of the third chapter, that any negative proposition may be treated exactly as an affirmative. And indeed it is obviously absurd to say, that—*some animals are not rational*—cannot be converted, but—*some animals are irrational*—can.

If therefore you have occasion to convert a particular negative, connect the negative particle with the *res copulata*, and make the new *res copulata*, thus formed, the subject of your converse. For instance: *some dogs are not greyhounds*, is converted into—*some things that are not greyhounds are dogs*.

And the third species of conversion, mentioned at the close of this chapter in the compendium, is nothing more than this. Thus if you wish to convert an universal affirmative by *contraposition*, express it in the form of an universal negative ; and as such convert it simply. For instance: *all greyhounds are dogs*, is equivalent with—*no greyhound is not-a-dog* ; the converse of which is—*nothing not-a-dog is a greyhound* ; or, *whatever is not a dog is not a greyhound*.

It is plain, that a particular affirmative cannot be converted thus. For, if you proceed to treat it as a particular

negative, in order to convert the latter, you must treat it as a particular affirmative.

It is also plain, that if an universal negative be thus converted, the converse will be a *particular* affirmative: as—*no greyhound is a mastiff*; therefore—*some things that are not mastiffs are greyhounds*.

[NOTES—PART II.—CHAP. VI. :—

1. THERE have been commonly two objections made to the definition of the text. The first, that it admits of apparent cases—viz. of A, with reciprocal terms to A; first of A, without reciprocal terms to O, of O to either A, E, I, or O, of I sometimes to A, sometimes to O. The second objection has been, that the conversion of false propositions is not provided for.—THYNNE.

There are two laws of conversion: that the quality be preserved, and that no term become more universal after conversion than before. To convert a modal proposition, the terms of the dictum are transposed, and the mode altered, if necessary, to conform to the matter inferrible; regarding the new dictum, "that man be an animal is necessary," becomes "that animals be men is contingent."—THYNNE.

QUESTIONS:—

What do you mean by conversion?—How far does it agree and differ from subalternation?—Which is simple conversion or *per accidens* more extensive?—How are universal affirmatives converted?—How are universal negatives?—How are particular affirmatives?—How are particular negatives?—Shew that a particular negative cannot be converted?—Can you draw any inference by conversion from a particular negative?—How are indefinite propositions converted?—On what does the quantity of the conversion depend?—What instances does Murray give of apparent conversion?—Why are they not real?—What is conversion by contra-position?—In what class of propositions does it take place?—What is A converted into by contra-position?]

CAPUT VII.

OPPOSITIO est discrepantia in qualitate inter propositiones idem subjectum, et idem prædicatum habentes. Ejus tres sunt species, *contradictio*, *contrarietas*, et *subcontrarietas*.

Contradictio est oppositio inter universalem et particularem, vel inter duas singulares. Contradictoriæ sunt vel A et O, vel E et I.

Contradictoriarum altera est semper vera, et altera falsa. Nam prædicatum vel toti subjecto convenit, vel a toto discrepat, vel parti convenit, et a parte discrepat. Si toti conveniat, affirmans erit vera et negans falsa, ut, *omnis homo est animal, aliquis homo non est animal*. Si a toto discrepet, negans erit vera, affirmans falsa, ut, *aliquis homo est lapis, nullus homo est lapis*. Denique, si parti conveniat et a parte discrepet, particularis erit vera, et universalis falsa, ut, *aliquis homo est justus, nullus homo est justus; aliquis homo non est justus, omnis homo est justus*. Si vero ambæ propositiones sint singulares, res patet; nam prædicatum subjecto singulari vel convenit vel non.

Contrarietas est oppositio inter duas universales, ut inter A et E.

Possunt esse simul falsæ, sed non simul veræ. Nam si prædicatum toti subjecto conveniat, affirmans erit vera, et negans falsa, ut *omnis homo est animal, nullus homo est animal*. Si a toto discrepet, negans erit vera et affirmans falsa, ut, *omnis homo est lapis, nullus homo est lapis*. Et si parti conveniat, a parte verò discrepet, utraque erit falsa, ut, *omnis homo est justus, nullus homo est justus*. In nullo ergo casu sunt simul veræ.

Subcontrarietas est oppositio inter duas particulares, ut inter I et O.

Possunt esse simul veræ, sed non simul falsæ. Nam si prædicatum toti subjecto conveniat, affirmans erit vera, et negans falsa, ut, *aliquis homo est animal, aliquis homo non est animal*. Si a toto discrepet, negans erit vera, et affirmans falsa, ut, *aliquis homo est lapis, aliquis homo non est lapis*. Et si parti conveniat, a parte vero discrepet, utraque erit vera, ut, *aliquis homo est justus, aliquis homo non est justus*. In nullo itaque casu sunt simul falsæ.

Subcontrariarum subjecta eadem esse videntur, sed revera sunt (aut saltem esse possunt) diversa ; subcontrarietas ideo appellatur oppositio apparens, non vera.

CHAP. VII.

OPPOSITION is a disagreement in quality between propositions that have the same subject and same predicate.¹ There are three species of it ; *contradiction*, *contrariety*, and *subcontrariety*.

Contradiction is opposition between an universal and particular proposition, or between two singular propositions. Contradictories are either *A* and *O*, or *E* and *I*.

Of contradictories, one is always false and the other true. For the predicate either agrees with the whole subject, or disagrees with the whole ; or agrees with part, and disagrees with part. If it agree with the whole, the affirmative will be true, and the negative false : as, *Every man is an animal*—*Some man is not an animal*. If it disagree with the whole, the negative will be true, and the affirmative false : as, *Some man is a stone*—*No man is a stone*.—Lastly, if it agree with part and disagree with part, the particular will be true, and the universal false : as, *Some men are just*—*No man is just*—*Some men are not just*—*All men are just*. But if both the propositions be singular, the case is plain : for the predicate either agrees with the singular subject, or does not.

Contrariety is opposition between two universal propositions, as between *A* and *E*.

Contraries may both of them be false, but cannot both be true. For if the predicate agree with the entire subject, the affirmative will be true, and the negative false : as, *Every man is an animal*—*No man is an animal*. If it disagree

with the whole, the negative will be true and the affirmative false; as, *Every man is a stone—No man is a stone.*—And if it partly agree, and partly disagree with the subject, both propositions will be false: as, *All men are just—No man is just.*—In no case therefore can they both be true.

Subcontrariety is opposition between two particular propositions, as between *I* and *O*.

Subcontraries may both of them be true, but cannot be false. For if the predicate agree with the whole subject, the affirmative will be true, and the negative false: as, *Some men are animals—Some men are not animals.* If it disagree with the whole, the negative will be true and the affirmative false: as, *Some men are stones—Some men are not stones.*—And if it agree with part, and disagree with part of the subject, both propositions will be true: as, *Some men are just—Some are not just.* In no case therefore can they both be false.²

The subjects of subcontrary propositions appear to be the same; but really are (or at least may be) different. Subcontrariety therefore is termed apparent opposition, not real.

COMMENTARY—CHAP. VII.

IN the two relative affections, of which we have hitherto treated, the two propositions compared together are of such a nature, that one of them follows by necessary inference from the other: so that, if the *subalternans* or *convertend* be true, the *subalterna* or *converse* deduced from the former, must be true also.

But we find other propositions so related, that if one of them be true, the other must be false: as when a predicate is said, in one proposition, to agree with the entire subject; and, in another proposition, the same predicate is said to disagree with the whole or part of the same subject: or else,

in one proposition, to disagree with the whole; and, in the other, to agree either with the whole or part.

Such propositions are called *opposite* propositions: and it is plain, that if one of them be true, the other must be false.

Of two opposite propositions, one is always affirmative, and the other negative. If they be both universal, the species of opposition is called *contrariety*: and one is said to be the *contrary* of the other. If one be universal and the other particular, the species of opposition is called *contradiction*: and one is said to be *contradictory* of the other.

Where, in one proposition, the predicate is said to agree with *part* of the subject, and, in another, the same predicate is said to disagree with part of the same subject; (as, *some dogs are greyhounds*, and, *some dogs are not greyhounds*,)—the propositions are called *subcontraries*; and between such propositions there is no real opposition. For the predicate is not really affirmed and denied about the same thing, but about different parts of the same thing: and accordingly such propositions may be both true.

That subcontraries may be both true, appears also from the rules of contrariety and contradiction. For two contraries may be false, and then their contradictories must both be true: but these are subcontrary propositions.

In opposite propositions, it is plain that if the matter of them be *necessary*, (vid. p. ii. c. l.) the affirmative will be true, and the negative false: if the matter be *impossible*, the negative will be true, and the affirmative false: if *contingent* or *possible*, the particular will be true, (whether affirmative or negative,) and the universal false. And therefore, in this case, two *contraries* will both be false.

It is on this account that, although singular propositions are otherwise considered as belonging to the class of universal; yet opposition between two singulars is reckoned *contradiction*, and not *contrariety*: because two opposite singular propositions cannot both be false, as two contraries may; but, like contradictories, must be one of them true, and the other false. From similar considerations it is plain, that opposition between an universal and singular (when their subjects are in the same predicamental line) is to be considered a species of contrariety.

NOTES—PART II.—CHAP. VII. :—

1. Two propositions are said to be *opposed* to each other when, having the same subject and predicate, they differ in *quantity* or *quality*, or *both*. It is evident that with any given subject and predicate you may state four distinct propositions, viz. A, E, I, and O, any two of which are said to be opposed; hence there are four different kinds of opposition, viz., 1st, the two individuals (A and E) are called contraries to each other: 2nd, the two particulars (I and O) subcontraries; 3rd, A and I or E, and O, are subalternations; 4th, A and O, or E and I are contradictories.—WHATELEY. We may here suggest the analogies of the three relative affections.

2. Subalternation always changes quantity, never quality, and never the order of the terms. Conversion sometimes changes quantity, never quality, but always the order of the terms. Opposition sometimes changes quantity, always quality, but never the order of the terms.

QUESTIONS:—

What is meant by the relative affection called opposition?—How many species are there of it?—What is contradiction?—What is the law of contradictories?—What opposition takes place between singulars?—What is contrariety?—What is the law of contraries?—What is subcontrariety?—Why is it only apparent?—Can contradiction exist between an universal and a singular proposition?—What is the contrary of O?—What is the contradictory of I?]

CAPUT VIII.

PROPOSITIONUM *compositarum* duæ sunt species, *compositæ* in verbis, i. e. quarum compositio exprimitur, et *compositæ* in sensu, i. e. quarum compositio latet.

Compositarum in verbis tres sunt species præcipuæ; *Copulativæ*, *Hypotheticæ*, et *Disjunctivæ*.

Copulativa est quæ habet plura subjecta vel prædicata, vel utraque, conjuncta particulâ copulativâ, *et*, *que*, *nec*, &c. ut, *Socrates fuit Atheniensis et philosophus*. In his singula prædicata de singulis subjectis prædicantur: ideoque veritas compositæ pendet a veritate omnium simplicium propositionum in quas resolvi potest.

Ad copulativas reducuntur *adversativæ*, in quibus, scil.

invenitur particula adversativa, ut *sed, tamen, quamvis*; &c. in his præter veritatem partium requiritur quædam oppositio inter partes. Si quævis pars sit falsa, composita erit falsa, ut, *Socrates fuit barbarus, sed philosophus*; et si nulla sit oppositio, erit absurda, ut, *quamvis Socrates fuit Atheniensis, fuit tamen philosophus*. Notandum verò est oppositionem non posse esse immediatam, quia immediatè opposita non possunt esse simul vera.

Hypothetica est cujus partes connectuntur particula conditionali *si*; in hypothetica semper duæ sunt partes, quarum ea quæ conditionem continet, vocatur *antecedens*, quia plerumque antecedit; pars quæ infertur, vocatur *consequens*.

Ad veritatem hypotheticæ requiritur solummodo partem posteriorem sequi a priori, hoc enim solummodo in ea affirmatur, ut, *si homo sit animal, homo vivit*: de partium vero veritate nihil absolutè, vel (ut loquuntur scholastici) categoricè pronunciatur; earum ergo veritas non requiritur, sed illæ possunt esse falsæ, et tota propositio vera, ut, *si lapis sit animal, sentit*; et contra, partes possunt esse veræ et propositio ipsa falsa, ut, *si homo vivat est animal*.

Disjunctiva est in quâ dicitur totum subjectum contineri, in duobus pluribusve prædicatis: ideoque veritas ejus pendet ex eo quod omnia prædicata simul sumpta totam extensionem subjecti continent. Cum duo sint prædicata hoc necessariò fit si ea sint immediatè opposita, i. e. si nihil tertium admittant; ex. gr. *omne animal est vel rationale, vel irrationale*; hæc propositio est necessariò vera, quia nullum est animal, quin in alterutro prædicatorum continetur: et similiter, *est vel ver, vel æstas, vel autumnus, vel hyems*; est propositio necessariò vera, quia quatuor prædicata simul omne (ideoque et præsens) tempus includunt.

CHAP. VIII.

OF compound propositions there are two species, *compounded in words*, or those whose composition is expressed, and *compounded in sense*, i. e. those whose composition is latent.

The principal species of the former are three; *Copulatives*, *Hypothetics*, and *Disjunctives*.

A *copulative* proposition is that, which has several subjects or predicates, or both several subjects and several predicates, connected together by a copulative particle—*and*, *nor*, &c. ; as, *Socrates was an Athenian and a Philosopher*.¹ In such a proposition each of the predicates is predicated of each of the subjects; and therefore the truth of the compound proposition depends on the truth of all the simple propositions, into which it may be resolved.

To the class of copulatives are reduced *adversative* propositions, viz. those in which we find an adversative particle; as, *but*, *yet*, *although*, &c. In these, besides the truth of the parts, some opposition between the parts is requisite. If any part be false, the compound will be false; as, *Socrates was a barbarian, but a Philosopher*: and if there be no opposition, it will be absurd; as, *Although Socrates was an Athenian, yet he was a Philosopher*. But it is to be observed that the opposition must not be immediate opposition; because things immediately opposite cannot at once be true.

An *hypothetic* proposition is that, whose parts are connected by the conditional particle *if*. In an hypothetic there are always two parts; of which the one that contains the condition is called the *antecedent*, because it commonly precedes the other; and the part which is inferred is called the *consequent*.

To the truth of an hypothetic it is only requisite, that the *latter* of these parts should follow from the former [i. e. the

consequent from the antecedent;] for this alone is asserted in it: as, *If a man be an animal, man is a living thing*. But about the truth of the parts nothing is pronounced absolutely or (as the schoolmen say) categorically. Therefore the truth of them is not requisite: but they may be false, and the whole proposition true; as, *If a stone be an animal, it is a sentient thing*: and on the other hand, the parts may be true, and the proposition itself false; as,* *If a man be a living thing, he is an animal.*²

A *disjunctive* proposition is that, in which the whole subject is said to be contained in two or more predicates: and therefore the truth depends upon this, that all the predicates taken together contain the entire extension of the subject. This is necessarily the case, when there are but two predicates, if they be immediately opposite, i. e. if they admit no third term [or nothing intermediate]. E. gr. *Every animal is either rational, or irrational*; this proposition is necessarily true, because there is no animal but is contained in one or other of the predicates. And in like manner, *The season is either spring, or summer, or autumn, or winter*, is a proposition necessarily true, because the four predicates together include every season, and therefore the present.

COMMENTARY.—CHAP. VIII.

FROM simple propositions, and the affections that belong to them, (whether taken separately or compared together,) we proceed to *compound* propositions; and first, to those, whose composition is obvious in the form of expression. Of these, three species are particularly noticed; viz. *copulative*, *hypothetic*, and *disjunctive*.

A *copulative* proposition may have several subjects, and but one predicate; or several predicates, and but one subject;

* *Life is attributed to vegetables, as well as animals.*

or both several subjects, and several predicates, connected together by a copulative particle. And each predicate being predicated of each subject, it will be resolvable into a number of simple propositions, equal to the product of the number of the subjects multiplied by the number of the predicates. If any one of these simple propositions be false, the copulative is not true.

In that species of copulative proposition, called *adversative*, there is farther requisite some opposition between the parts, which are connected by the adversative particle. For the existence of some such opposition is implied in the meaning of that particle; the use of which, therefore, is absurd, if there be no opposition between them. Thus, if I say —*Anacharsis was a Scythian, and a Philosopher*,—it is a copulative proposition of the common kind. But, if I say —*Anacharsis was a Scythian, yet a Philosopher*,—it is an adversative proposition; and contains, along with what was before asserted, an intimation that the characters of a Scythian and a philosopher were not generally united.

The two parts of which an *hypothetic* proposition consists, called the *antecedent* and *consequent*, are not to be distinguished by their order; for the antecedent, or that which has the *conditional* particle prefixed to it, is frequently expressed after the consequent.

In an *hypothetic*, we do not assert any thing absolutely about the truth either of the antecedent or of the consequent; but only that, *if* the antecedent be true, then the consequent must be true also, as following from it by necessary inference. Therefore, if there be a *vis consequentiæ* in the inference, the *hypothetic* will be true, though one or both of the parts be false; and though both of the parts be true, the *hypothetic* will be false, if there be no *vis consequentiæ*.

But it is plain that, if the antecedent be true and the consequent false, the *hypothetic* cannot be true, inasmuch as falsehood cannot follow from truth.

A *disjunctive* proposition, or that in which the whole subject is said to be contained in two or more predicates, is subject to all the laws of *division*; of which we shall treat in the tenth chapter.

It might perhaps be questioned, whether *hypothetic* or *disjunctive propositions* be really *compound*: as there is but

one thing that is asserted; and the truth of which is necessary to their truth.

[NOTES—PART. II.—CHAP. VIII. :—

1. The number of simple propositions into which a copulative may be resolved is determined by multiplying the number of subjects into that of the predicates.

2. *To determine the varieties of hypothetics:* 1st, the antecedent and consequent may have one common term; 2nd, both terms common, as, "if no man be a stone, no stone is a man;" 3rd, no term common, as, "if every animal lives, every man is a substance." The first case corresponds to syllogism, the second to relative affection, and the third to sorites.—THYNNE.

QUESTIONS :—

What is a compound proposition?—How many kinds are there?—What are the species of those compounded in words?—On what does the truth of the copulative depend?—Why are adversatives reduced to the class of copulatives?—What are the requisites in adversatives?—Into how many propositions may a copulative be reduced?—How may it be denied?—What is an hypothetic?—What is requisite for its truth?—How many forms may it assume?—What is a disjunctive proposition?—Give a better definition for it than the compendium?—What does its truth depend on?]

CAPUT IX.

PROPOSITIONES *sensu compositæ* aliter appellantur *expōnibiles*, quia expositione indigent; videntur enim esse simplices cum sint compositæ.

Quatuor enumerantur earum species; *exclusivæ*, *exceptivæ*, et *inceptivæ*, vel *desitivæ*.

Exclusiva est in quâ dicitur prædicatum subjecto soli convenire, vel a solo discrepare, ut, *virtus sola est nobilitas*: hæc potest in duas resolvi, 1°. prædicatum subjecto convenire: 2°. nulli alii subjecto convenire: ut, *virtus est nobilitas*; *nihil præter virtutem est nobilitas*: et similiter in negativis.

Exceptiva est in quâ dicitur prædicatum subjecto convenire, vel ab eo discrepare, exceptâ aliquâ ejus parte; ut, *omnes præter sapientem, insaniunt*: hæc potest in duas resolvi; 1°. prædicatum non convenire parti quæ excipitur; 2°. omnibus reliquis partibus convenire, ut, *sapiens non insanit*; *omnes alii homines insaniunt*, et similiter in negativis.

Exclusivæ et exceptivæ solâ phrasi differunt; nam omnis exceptiva mutari potest in exclusivam æquipollentem, et vice versâ: ut, *solus sapiens non insanit*.

Comparativa est in quâ comparatio instituitur, ut, *amicum perdere est damnorum maximum*: hæc potest in duas resolvi; 1°. prædicatum subjecto convenire, vel ab eo discrepare: 2°. convenire vel discrepare in majore vel minore gradu: ut, *amicum perdere est damnum*; *amicum perdere est alio quovis damno majus*.

Inceptiva vel *desitiva* est in quâ aliquid incipere vel desinere dicitur, ut, *post obitum Gracchorum Roma desiit esse libera*: hæc potest in duas resolvi, quarum prima declarat statum rei ante mutationem factam; secunda, statum rei post: ut, *ante obitum Gracchorum Roma fuit libera, postea non fuit libera*.

CHAP. IX.

PROPOSITIONS compounded in sense are otherwise called *exponible*, because they need exposition (or explanation); for they seem to be simple, though they are compound. Of them four species are enumerated, *exclusive*, *exceptive*, *comparative*, and *inceptive* or *desitive*.¹

An *exclusive* proposition is that in which the predicate is said to agree with the subject alone, or to disagree with it alone: as, *Virtue alone is nobility*. This may be resolved into two assertions: 1. that the predicate agrees with the

subject; 2. that it agrees with no other subject. As,—*Virtue is nobility—Nothing besides virtue is nobility*: and in like manner in negative propositions.

An *exceptive* proposition is that in which the predicate is said to agree or disagree with the subject, except in some part of it: as, *All except the wise man are mad*. This may be resolved into two assertions: 1. that the predicate does not agree with the excepted part; 2. that it agrees with all the other parts of the subject. As—*The wise man is not mad—All other men are mad*: and in like manner in negatives.

Exclusives and exceptives differ only in expression: for every exceptive may be changed into an equivalent exclusive, and v. v. as, *The wise man alone is not mad*.²

A *comparative* proposition is that in which a comparison is instituted; as, *To be deprived of a friend is the greatest of losses*. This may be resolved into two assertions: 1. that the predicate agrees or disagrees with the subject; 2. that it agrees or disagrees in a greater or lesser degree. As—*To be deprived of a friend is a loss—It is a greater loss than any other*.

An *inceptive* or *desitive* proposition is that, in which any thing is said to begin or end: as, *After the death of the Gracchi, Rome ceased to be free*. This may be resolved into two assertions, the first of which declares the state of the thing before the change; and the second, the state of it after the change. As—*Rome was free till the death of the Gracchi—After their death, Rome was not free*.³

COMMENTARY.—CHAP. IX.

BESIDES the former kind of compound propositions, there are others, whose composition does not so obviously appear in the form of expression. They are called *exponibles* as

needing explanation—(not to show their meaning, for that is as clear as the meaning of the former; but)—to show their latent composition.

Of the four species of these mentioned, little need be said, in addition to what is contained in the compendium. Only you may observe, that in changing an *exclusive* proposition into a synonymous *exceptive*, the subject of the exclusive becomes the *excepted part* in the exceptive: and if the exclusive be affirmative, the exceptive will be negative, and v. v. For an affirmative exclusive asserts that the predicate *agrees* with the subject alone; which is the same thing as to say, that the predicate *disagrees* with all except that subject: and this is a negative exceptive.

Thus, the exclusive—*Men are the only animals that reason*,—when expressed in the form of an exceptive, will be—*No animals but men reason*.

Such propositions, as well as *inceptives* and *desitives* (in which something is said to begin or end), are properly compound propositions: because the truth of two distinct assertions is necessary to constitute them true. Whether *comparative* propositions always belong to the class of *compound*, may be doubted. Certainly if I say, that *Diogenes was as great a man as Alexander*, the proposition does not necessarily imply that either of them was a great man. But it is not worth while to pursue the inquiry further.

[NOTES—PART II.—CHAP. IX. :—

1. OBJECTIONS have been made to this enumeration: 1st, that there is no reason whatever to consider comparatives as compound. If, for example, it be said that "the Bereans were nobler than the Thessalonians," it is not necessarily to be understood that the Thessalonians were noble; 2nd, that these exponible cannot be resolved into simple propositions, but this objection does not apply with truth to any but comparatives, for example, "virtue alone is nobility," is obviously different from "nothing besides virtue is nobility;" 3rd, that inceptives and desitives are distinct as exclusives and exceptives.—THYNNE.

2. To change an exceptive to an exclusive, the exceptive part is made the exclusive subject, and the quality changed.

3. An inceptive becomes desitive by using the desitive verb for the inceptive, and instead of the state after the change declaring *the state before*, and similarly the desitive may become inceptive.

QUESTIONS:—

What do you mean by propositions compounded in sense?—How many species are there of propositions compounded in sense?—What is an exclusive proposition?—How is an exclusive refuted?—What is an exceptive proposition?—What relation is there between an exclusive and exceptive?—What is a comparative proposition?—How may it be resolved?—What are inceptive and desitive propositions?]

CAPUT X.

DEFINITIO est vel nominis vel rei. Nominis, est explicatio significationis vocis quæ fuerat ignota: ut, *triangulum significat figuram quæ habet tres angulos*.

Definitio rei est propositio quæ explicat quid sit res. Definitionis rei duæ sunt species, *definitio propriè dicta*, et *descriptio*.

Definitio propriè dicta est quæ naturam rei perfectè explicat per attributa essentialia, ut, *homo est animal rationale*: constare debet ex genere et differentiâ essentiali. Sic in exemplo allato, *homo*, est res definita; et *animal rationale*, est ejus definitio; in quâ *animal* est genus, *rationale* est differentia essentialis.

Descriptio est quæ naturam rei explicat per attributa non essentialia, vel saltem non perfectè: ut, *homo est animal bipes implume*.

Definitionis rei duæ sunt leges. 1°. Debet esse adæquata, i. e. continere totam rem definitam, et nihil præterea; 2°. Debet esse clara, i. e. talis esse debet, ut statim innotescat rei definitæ natura. Utrum vox in eâdem significatione usurpetur in quâ definitur, dignosci potest, loco vocis substituendo definitionem. Nam si maneat totius orationis sensus, eâdem significatione definitur et usurpatur; aliter si non.

Divisio est vel nominis, vel rei.

Divisio nominis (quæ propriè *distinctio* appellatur) est enumeratio significationum vocis æquivocæ, vel sententiarum ambiguæ orationis; ut, *canis* est vel *animal* vel *sidus*, &c.; *Quod tangitur a Socrate, illud ipsum sentit*. Hujus propositionis duæ possunt esse significationes, vel *Socrates sentit rem quam tangit*: vel, *res, quam tangit Socrates, sentit*.

Divisio rei est distributio totius in omnia quæ continet. Totum verò est duplex, 1°. *Totum universale*, quod est terminus universalis, cujus partes, si sit genus, sunt species; si sit species, sunt individua: hæ partes appellantur *subjectivæ*; 2°. *Totum integrum*, cujus partes appellantur *integrantes*: hæ partes sunt reverâ distinctæ, et ex omnibus iis simul sumptis, conficitur totum. Hinc duæ sunt species divisionis rei, scil. totius universalis, ut, *Animalis in hominem et brutum*; et totius integri (quæ propriè partitio appellatur), ut, *regni in suas provincias*.

Divisionis duæ sunt leges. 1°. Debet esse *adæquata*, i. e. omnes partes simul, nec plus nec minus continere debent quam totum. 2°. Partes debent esse inter se ita *distinctæ*, ut una non possit de alterâ affirmari. Sic quamvis lineæ contineantur in superficie, et superficies in corpore, rectè tamen dividitur *magnitudo* in *lineam*, *superficiem* et *corpus*: quia affirmari nequit *lineam esse superficiem*, aut vicissim.

CHAP. X.

DEFINITION is either of a name or thing. *Definition of a name* is the explanation of the meaning of a word that was before unknown; as, *A triangle signifies a figure that has three angles*.

Definition of a thing is a proposition which explains what a thing is. There are two species of it, definition properly so called, and description.

Definition properly so called is that, which perfectly explains the nature of the thing by its essential attributes: as, *Man is a rational animal*. It ought to consist of the genus and essential difference. Thus, in the example adduced, *man* is the thing defined, and *rational animal* is its definition; in which *animal* is the genus, and *rational* the essential difference.¹

Description is that which explains the nature of the thing by its non-essential attributes, or at least not perfectly: as, *Man is an animal with two legs and without feathers*.

There are two laws of definition: 1. it ought to be adequate, i. e. it ought to include the whole thing defined, and nothing more: and 2. it ought to be clear, i. e. such as immediately to discover the nature of the thing defined.²

Whether a word be used in the same meaning in which it has been defined, may be discovered by substituting the definition in place of the word. For if the sense of the whole passage remain unaltered, it is used in the same signification in which it was defined; otherwise not.

DIVISION is either of a name or of a thing. *Division of a name* (which is properly called *distinction*) is the enumeration of the meanings of an equivocal word, or ambiguous sentence; as, *Canis* is either an *animal*, or *star*, &c. *Quod tangitur a Socrate, illud ipsum sentit*: this proposition may have two meanings; either, *Socrates feels the thing which he touches*; or, *The thing which Socrates touches has feeling*.³

Division of a thing is the distribution of a whole into all that it contains. A whole is twofold; 1. an *universal whole*, which is an universal term, whose parts, if it be a genus, are species; if it be a species, are individuals. These parts are called *subjective*, because any universal term may be universally affirmed of each species or individual contained in its extension: 2. an *integral whole*, whose parts are termed *ingrants*. These parts are really distinct; and of them all

taken together the whole is made up. Hence there are two species of the division of a thing, viz. of an universal whole, as of *animals* into *men* and *brutes*; and of an integral whole (which division is properly called *partition*), as of a *kingdom* into its provinces.

There are two laws of division: it ought to be adequate, i. e. all the parts together ought to contain neither more nor less than the whole; 2. the parts ought to be so distinct from each other that one cannot be affirmed of another. Thus, although lines are contained in a surface, and surfaces in a solid, yet *magnitude* is rightly divided into *lines*, *surfaces*, and *solids*; because we cannot affirm that *a line is a surface*, or *v. v.*

COMMENTARY.—CHAP. X.

THERE are few subjects, connected with the art of right reasoning, which claim your attention more than *definition* and *division*. Definition of *words* we leave to lexicographers; only observing that, if you would have an accurate knowledge of the signification of words in any language, you cannot safely depend upon the lexicons in common use. Their definitions are so loose, that they seldom give their precise force; and thus confound the meaning of different words, that are by no means really synonymous. The critical student must supply this deficiency, by attentively observing and comparing the different passages which show how they are used by the best writers in the language.

When definition is employed, not merely to make known the meaning of words, (which is arbitrary,) but to convey information about the things which those words signify; we are then said to define *things*: and this, either by *definition proper*, or by *description*. The former is said to explain the nature of the thing *perfectly*, by two of its *essential* attributes; namely, the proximate genus and essential difference. This kind of definition we shall call, for *distinction's sake*, the Aristotelic definition.

Now it is plain, that this definition is only applicable to *species*, and that neither *summa genera* nor *individuals* are capable of being thus defined; the former, because they have no genus above them; and the latter, because they have no essential difference, i. e. none known to us. The attributes that distinguish different individuals of the same species infima, are non-essential attributes or accidents (vid. chap. 3, p. 1.) Though I may, therefore, in defining an individual, employ the species infima to which it belongs, as its genus, I am forced to enumerate various accidents belonging to it, to supply the want of an essential difference. And this is called *description*; which is said to explain the nature of the thing *imperfectly* by *non-essential* attributes.

As to *summa genera*, the definition given for *substance*, in the 4th chapter of the first part, may appear to contradict my observation, that the Aristotelic definition is inapplicable to *summa genera*. But in fact, if you observe that definition—"a thing subsisting by itself,"—you may perceive that *substance* is there treated, not as a summum genus, but as a *species* of *things*; and that, "subsisting by itself" is the essential difference of that species, distinguishing it from the other species, of things, namely, *attributes*, which cannot subsist by themselves.

Strictly speaking, therefore, there is but one summum genus—*ens* or a *thing*; which we can only define negatively by saying, that it is *whatever is not nothing*.

When a species is defined by the Aristotelic definition, the first requisite of good definition, namely, that it should be *adequate*, is always obtained. For the *genus* expresses all that it has *in common* with the other species of the same genus; and the *essential difference* expresses that which *discriminates* it from them all.

But notwithstanding this advantage, the Aristotelic definition (as Mr. Locke observes) commonly fails in the second requisite, namely, that it should be *clear*, or should immediately discover the nature of the thing defined. Brevity is studied in it more than clearness: for the *proximate* genus is employed to prevent the necessity of enumerating several essential differences. But it frequently happens, that the proximate genus is itself a species, or a complex idea, that needs definition as much as the species defined.

Mr. Locke, therefore, justly observes, that many complex

ideas are better defined—because more clearly—by a distinct enumeration of all their component parts; instead of only resolving them into two parts; and that, in many cases, definition of any kind is not either the best way, or indeed a practicable way at all, of making known the thing.

But to return to the first law of definition, that it ought to be *adequate*. A definition may be inadequate in two ways; either if it be not applicable to the whole of the thing defined; or if it be applicable to anything else than the thing defined.

In both these respects, the definition given for conversion, in the compendium, violates the law. It is not applicable to the whole thing defined; for a false proposition is convertible, as well as a true. Now, if from a false proposition we deduce another, in which the terms are transposed, there is a real conversion; but we cannot say that the *truth* of the convertend is *preserved* in the converse, as there was no truth to be preserved. Again, we often may transpose the terms of a proposition, and *preserve* the truth, and yet no real conversion may take place; because there is no *vis consequentiæ*: and to such a case the definition, given in the beginning of that chapter, would be applicable, although (as is admitted in the close of the chapter) that is not conversion.

In the ~~same~~ respect, the definition of *subalternation* given in the compendium, is inadequate; not as inapplicable to the whole thing defined, but as being applicable to what is not subalternation. For in *conversion per accidens* also, we “deduce a particular proposition from an universal.” In order, therefore, to make the definition of subalternation adequate, it is necessary to add that the subalternans and subalterna have the same subject and predicate.

In like manner, the definitions given in the compendium for an *universal term*—an *universal proposition*—a *true proposition*, &c. will be found to need the alterations which I have suggested in order to make them adequate.

The rule for examining whether a word be used in the same sense in which it has been defined, namely, by substituting the definition in place of the word defined, is a most important one. For it frequently happens, that writers, after laying down a definition, lose sight of it in their progress; of which you may see a striking instance in Mr. Locke,

where he treats of *qualities*, and elsewhere. And indeed, if they took the trouble of strictly defining their words, and closely adhering to the sense in which they defined them, many disputes, that agitate polemics, would be brought to a speedy issue.

We now pass to *division*. And on division of a *name*, otherwise called *distinction*, I shall only observe that it is frequently necessary, in examining the arguments of another, to observe the different senses in which we may understand a word or proposition that he employs; and to distinguish them carefully. For instance—a proposition may in one sense be true, and in another false or doubtful. And many writers take advantage of this ambiguity, confounding the two senses; displaying its truth and certainty in the sense which is indubitable, but which perhaps makes nothing for their argument; and then applying it to their argument in the other sense, in which it is by no means true or certain.

Division of a *thing*, or the distribution of any whole into all its parts, is of frequent use in the species of argument mentioned in the 8th and 9th chapters of the following part. And in such arguments a fallacy may frequently be detected, by showing that the division, on which they are founded, is not made agreeably to the laws of division.

The first of these laws is, that the division ought to be adequate, i. e. that all the parts together ought to contain neither more nor less than the whole. Every thing, that is contained in the whole, must be enumerated; and nothing, that is not contained in it.

The second law of division is, that the parts must be so *distinct*, that no one of them can be affirmed of any other; or that one shall not be contained in another.

Now a division being made in every *disjunctive* proposition, it is plain that such a proposition must be subject to both the laws of division. And here the predicates are the *parts*, into which the whole subject is divided. It is necessary therefore that they, taken together, should not only contain no less than the whole subject, but also that they should contain no more. And if either part of this rule be violated, the disjunctive will be false: for it is not only asserted, that the subject does not contain any more than all the predicates, but that it does contain them all.

But it is likewise necessary, in a disjunctive proposition,

that the predicates should be distinct, according to the second law of division.

Both these requisites of good division are, certainly, attained in that kind of division of which Peter Ramus was particularly fond. In it, the whole was always divided into two parts, one of which was immediately opposed to the other. To this kind of division Ramus and his followers were extravagantly attached; and it is certainly, in many cases, the best.

But, when employed, you must take care that you do not mistake things for immediately opposite which are not really so. Thus, if you were to divide actions into *good* and *bad*, under a supposition that whatever is not a good action must be a bad one, you would be involved in many false conclusions: as there are actions which are neither good nor bad, but indifferent.

There is a third requisite to good division, which is not mentioned in the compendium. It is this: that the parts ought to be of the same degree in the predicamental line; no one of them a higher species than the rest. Thus, if I divide all the under-graduates of College into—*Senior Sophisters, Junior Sophisters, and Freshmen*, the division is adequate indeed, and the parts distinct; yet it is a bad division: because the two first parts are more subordinate species than the third. And to correct it, I should either divide them into—*Sophisters and Freshmen*; or, if I enumerate the two species of Sophisters, I should also enumerate the two species of Freshmen, and say—*Senior Freshmen and Junior Freshmen*.

Now you have an instance of such a bad division in the ten predicaments: in which enumeration, if the first member of the division be *substances*, or things subsisting by themselves, the only other member ought to be—things not subsisting by themselves, or the *attributes* of substances. The nine latter predicaments are but the different species of this genus.

[NOTES—PART II.—CHAP. X.:—

1. This method of definition is usually named the Aristotelic. *Locke* endeavoured to impugn it, because it is not sufficiently clear,

and recommends to enumerate the several attributes, instead of implying many together in a *proximum genus*.

2. There are three cases to which this definition is inapplicable. *Summa genera* which have no genus or essential difference; individuals which have no essential difference; and the names of simple ideas, which have no complexity or difference.—THYNNE.

3. The name of the thing to be defined and the definition are reciprocal terms.

4. If a definition be chargeable with tautology, it is incorrect, though without offending against the two rules. Tautology consists in inserting too much, not in mere words, but in sense. Thus to define a parallelogram "a four-sided figure whose opposite sides are parallel and equal," would be tautological, because, though it is true that such a figure and such alone is a parallelogram, the equality of the sides is implied in their being parallel, and may be proved from it.—WHATELEY.

QUESTIONS :—

What is a definition?—How many kinds of definitions are there?—What is a definition of a name?—What of a thing?—How many species of definitions of a thing?—What is a perfect definition?—What is a description?—How many are the laws of definitions?—How may it be known that a word is used in the sense defined?—How many kinds of division?—What is division of a name?—What of a thing?—How many kinds of *totum*?—What is a *totum universale*?—What is a *totum integrum*?—What are the laws of division?—How do definitions of a name and thing differ?—The parts of a *totum universale* are less than those of a *totum integrum*; why?]

PARS III.—CAPUT I.

TERTIA mentis operatio est *discursus*, qui est illatio unius iudicii ex pluribus. Ut plurimum ex duobus iudiciis infertur tertium; hæc species verbis prolata, est *Syllogismus*, qui itaque definitur, illatio unius propositionis ex duabus.

Ante disputationem institutam proponitur propositio quædam, plerumque simplex, quæ itaque duos habet terminos; et quoniam de horum terminorum convenientiâ dubitatur, propositio proposita, primum appellatur *quæstio*: facto verò syllogismo, hæc ipsa propositio fit ipsius *conclusio*; hinc apud Logicos, idem significant *quæstio* et *syllogismi conclusio*.

In propositione universali affirmante, predicatum ut plurimum majorem habet extensionem quam subjectum, nunquam habet minorem: (ut ex dictis in parte secundâ intelligi potest:) prædicatum itaque quæstionis appellatur *major terminus*, et subjectum, *minor terminus*: communi verò nomine appellantur *extremi*.

Si horum terminorum convenientia vel discrepantia immediate percipi nequeat, invenitur tertius aliquis terminus, quo cum utrisque comparato, eorum convenientia vel discrepantia exinde innotescat. Hic tertius appellatur *terminus medius*, et aliquando *argumentum*.

Horum trium terminorum quisque bis repetitur: ex iis ergo fieri possunt tres propositiones: in primâ (si ordine debito disponantur) comparatur terminus medius cum majore; hæc ideo appellatur usitatissimè *major propositio*; aliquando verò simpliciter appellatur *propositio*. In secundâ comparatur medius cum minore; hæc itaque usitatissimè appellatur *minor propositio*; aliquando verò *assumptio*. In tertiâ comparantur inter se extremi, quæ, quoniam ex propositionibus majore et minore deducitur, appellatur conclusio, deductio, collectio, &c. Major propositio et minor, quoniam conclusioni præmittuntur, communi nomine appellantur *præmissæ*.

Ex. gr. *Omne animal sentit*:

Omnis homo est animal:

Ergo, *Omnis homo sentit*.

In hoc syllogismo, *homo*, scil. subjectum conclusionis, est minor terminus; *sentit*, ejus prædicatum, est major terminus, et *animal* est medius; et prima propositio est major, secunda est minor, et tertia, conclusio.

Quoniam syllogismus constat immediatè ex his tribus propositionibus, eæ appellantur *materia proxima* syllogismi: et quoniam illæ constant ex tribus terminis, hi termini appellantur *materia remota*.

Forma syllogismi est apta trium propositionum dispositio ad conclusionem ex præmissis necessariò colligendam.

Hactenus dicta in quibuscunque syllogismis locum habent, est vero diversitas quædam observanda inter syllogismos. Nam major propositio (ut dictum fuit) semper constat ex majore termino et medio; sed non determinatur utrum medius sit ejus subjectum an prædicatum: et similiter minor propositio semper constat ex minore termino et medio; sed nec in eâ determinatur utrum medius sit subjectum an prædicatum. Et hinc oritur diversitas inter figuras syllogismorum.

Figura syllogismi est legitima dispositio medii in præmissis. Et quoniam quatuor diversis modis disponi potest medius, quatuor sunt figuræ.

Primâ figurâ est in quâ medius est subjectum majoris propositionis, et prædicatum minoris.

Ex. gr. *Omne animal sentit;*
Omnis homo est animal;
Ergo, *Omnis homo sentit.*

Secunda figura est in quâ medius est utriusque præmissæ prædicatum.

Ex. gr. *Nullus lapis est animal;*
Omnis homo est animal;
Ergo, *Nullus homo est lapis.*

Tertiâ figurâ est in quâ medius est utriusque præmissæ subjectum.

Ex. gr. *Omne animal sentit;*
Omnæ animal vivit;
Ergo, *Aliquod vivens sentit.*

Quartâ figurâ est in quâ medius est majoris propositionis prædicatum, et minoris subjectum.

Ex. gr. *Omnis homo est animal ;*
Omne animal sentit ;
 Ergo, *Aliquod sentiens est homo.*

PART III.—CHAP. I.

THE third operation of the mind is *reasoning*, which is the inference of one judgment from several. Most commonly from two judgments a third is inferred; and this species expressed in words is called *sylogism*, which is therefore defined—the inference of one proposition from two.

Before the commencement of a disputation, some proposition is proposed, commonly a simple one, which has therefore two terms; and as it is about the agreement or disagreement of these terms the doubt is entertained, the proposed proposition is at first called the *question*; but when the syllogism is formed, this very proposition becomes its *conclusion*. Hence the question and conclusion of a syllogism mean the same thing with Logicians.

In an universal affirmative proposition the predicate has commonly a greater extension than the subject, and never has a less; (as may be seen from what we have said in the second part, chap. 3. :) and therefore the predicate of the question is called the *major term*, and its subject the *minor term*; but by a common name they are called *extremes*. If the agreement or disagreement of these terms cannot be immediately perceived, there is found some third term, which being compared with both, this agreement or disagreement may thence be shown. This third term is called the *middle term*, and sometimes the *argument*.¹

Each of these three terms is twice repeated; therefore three propositions can be made out of them. In the first, (if they be disposed in due order,) the middle term is compared with the major; and this is therefore most usually called the *major proposition*, but sometimes simply *the proposition*.

In the second, the middle term is compared with the minor ; and this is therefore most usually called the *minor proposition*, but sometimes the *assumption*. In the third, the extremes are compared with each other, which, being deduced from the major and minor propositions, is called the *conclusion*, *deduction*, *collection*, &c. The major and minor propositions, as they go before the conclusion, are called by a common name *premises*. E. gr. *Every animal has feeling—Every man is an animal—Therefore, Every man has feeling*. In this syllogism, *man*, i. e. the subject of the conclusion, is the minor term ; *has feeling*, its predicate, is the major term ; and *animal* is the middle term : and the first proposition is the *major*, the second is the *minor proposition*, and the third the *conclusion*.²

A syllogism consisting immediately of these three propositions, they are called the *proximate matter* of the syllogism : and as they consist of three terms, these terms are called the *remote matter*.

The *form* of a syllogism is the apt disposition of the three propositions, so as to collect the conclusion from the premises by necessary inference.

What we have hitherto said applies to all syllogisms whatsoever ; but there is a certain diversity to be observed among syllogisms. For the major proposition (as has been said) always indeed consists of the major and middle terms ; but it is not determined whether the middle be its subject or predicate ; and in like manner, the minor proposition always consists of the minor and middle terms : but neither in it is it determined whether the middle term be its subject or predicate. And hence arises the diversity between the figures of syllogisms.

The *figure* of a syllogism is the legitimate disposition of the middle term in the premises. And as the middle term may be disposed in four different ways, there are four figures.

The first figure is that, in which the middle term is the subject of the major proposition and predicate of the minor. E. gr. *Every animal has feeling—Every man is an animal.* Therefore, *Every man has feeling.*

The second figure is that, in which the middle is the predicate of both premises. E. gr. *No stone is an animal—Every man is an animal.*—Therefore, *No man is a stone.*

The third figure is that, in which the middle term is the subject of both premises. E. gr. *Every animal has feeling—Every animal has life.* Therefore, *Some living things have feeling.*

The fourth figure is that, in which the middle term is the predicate of the major proposition and subject of the minor. E. gr. *Every man is an animal—Every animal has feeling.* Therefore, *Some things possessed of feeling are men.*²

COMMENTARY.—PART III.—CHAP. I.

WE NOW proceed to the third operation of the understanding, called in Latin *discursus*, and in English *reasoning*, or argument: that act of the mind, by which we infer one judgment from several.

In the fifth and sixth chapters of the preceding part, we considered two kinds of inferences, which do not properly come under the present head. There, from *one* proposition we inferred another, consisting of the *same* terms, either in the same order, as in subalternation; or, in a transposed order, as in conversion. But to constitute *reasoning*, in the sense in which we now use the word, there must be more than one proposition, either expressed or understood, from which the inference is drawn; and the proposition inferred must consist not of the same terms, with any one of the propositions from which it is inferred.

That form of reasoning or argument, which the old Logicians preferred to every other, (and which we shall hereafter vindicate against the unfounded objections of Mr. Locke,) is called *Syllogism*. In it, from two propositions,

called the *premises*, we infer a third, called the *question* or *conclusion*.

In a simple syllogism, there are three different terms. For the nature of syllogistic reasoning is this; that we prove the agreement or disagreement between the subject and predicate of the conclusion, from their agreement or disagreement with a third term, with which we compare each of them alternately in the premises.

The subject and predicate of the conclusion are called the *extremes*; the third term, with which they are alternately compared, is called the *middle term*. One of the premises consists of the middle term and predicate of the conclusion; and is called the *major proposition*, because the predicate of the conclusion is called the *major term*. The other premiss consists of the middle term and subject of the conclusion; and is called the *minor proposition*, because the subject of the conclusion is called the *minor term*.

Thus, in the following Syllogism:—*No irrational being is accountable for his actions—Some men are irrational.—Therefore, Some men are not accountable for their actions*;—the middle term is *irrational beings*; and from its disagreement with one of the extremes, and its agreement with the other, I am enabled to infer the disagreement between the extremes, which is asserted in the conclusion.

When any simple syllogism is laid before you, it is absolutely necessary that you should be expert in distinguishing the several parts of which it consists. It is easy to distinguish the middle term, by observing that term which occurs in each premiss, and does not appear in the conclusion. You may also distinguish the major proposition, by observing that premiss, which consists of the middle term and the predicate of the conclusion. This premiss is commonly the first; but the order of the premises being sometimes changed, you cannot safely judge by that circumstance.

The reason why the predicate of the conclusion is called the *major term*, and its subject the *minor*, is,—not that the former has *always* a greater extension than the latter, or as great,—but that the predicate of a *universal affirmative proposition* must have, at least, as great an extension as the subject, and generally has a greater. For such a proposition asserts that the entire extension of the subject is contained in the extension of the predicate (vid. c. 3. p. 2.): and that

being reckoned the most perfect syllogism, in which an universal affirmative conclusion is deduced, the extremes were distinguished, in all cases, by the names of *major* and *minor* terms, on account of what is true of them in that particular case.

Syllogisms are distinguished into different *figures*, according to the situation which the middle term holds in the premises. If the middle term be the subject of the major proposition and predicate of the minor, the syllogism is said to be in the first figure; if the predicate of both, it is said to be in the second figure; if the subject of both, in the third figure; and if it be the predicate of the major and subject of the minor, the syllogism is said to be in the fourth figure.

It is plain, that this enumeration includes all the possible varieties of place, which the middle term can have; and that there cannot therefore be more than four figures.

Aristotle did not acknowledge the fourth figure, on account of the unnatural order of the terms: and it was to exclude it, that the figure of a syllogism was defined to be—"the *legitimate* disposition of the middle term in the premises." The word *legitimate* should therefore be omitted, in that definition, by those who receive the fourth figure. In one view, however, the third figure is inferior to both the second and fourth; as will appear from the observations at the end of the fourth chapter. It is plain that, in the first figure, the major term, or predicate, of the conclusion, is the predicate also of the major proposition; and that the minor term, or subject of the conclusion, is the subject also of the minor proposition; but that, in the fourth figure, both the extremes have a contrary place in the premises, from that which they have in the conclusion; that, in the second figure, the minor proposition and conclusion have the same subject; and, in the third figure, the major proposition and conclusion have the same predicate.

It is necessary for you to be expert in distinguishing the figure of any proposed syllogism, and clear in conceiving the arrangement of all the terms in each figure. To find the former, observe which is the middle term; and, having found it, observe the place it holds in each premiss, as the subject or predicate. This ascertains the place, which the predicate of the conclusion holds in the major proposition; and which the subject of the conclusion holds in the minor.

The schoolmen, speaking of the *matter* and *form* of a syllogism, intended by the former the propositions and terms, which compose it; and by the latter, its legitimacy as to figure and mode, or as to the disposition of the middle term, and the quantity and quality of the propositions.

[NOTES.—PART III.—CHAP. I. :—

1. EVERY argument consists of two parts, that which is proved, and that by means of which it is proved; the former is called, before it is proved, the question; when proved, the conclusion or inference; that which is used to prove it, if stated last (as is often done in common discourse), is called the *reason*, and is introduced by "because," or some other casual conjunction. If the conclusion be stated *last* (which is the strict logical form to which all reasoning may be reduced), then that which is employed to prove it is called the *premises*, and the conclusion is then introduced by some illative conjunction as "therefore."—WHATELEY.

2. The circumstances of the terms of A are made the standard, to denominate by that sort of propositions being the most philosophical, also the real extensions of the terms of the other kinds. E, I, and O, could not be compared from anything stated in those propositions.—THYNNE.

3. If the agreement or disagreement immediately appears, that appearance is named intuitive; if it does not immediately appear but by the intervention of other ideas, that is named demonstration.

4. *If a premiss and conclusion be interchanged, what alterations of character result among the terms.* 1st, the extreme of transposed premiss preserves its name, for as this extreme occurred in the transposed premiss, which is now the conclusion, it is an extreme in the new syllogism, and occurring in former conclusion, which is now substituted premiss, it is the extreme of this premiss and cognominal with it and with the transposed; 2nd, the extreme of retained premiss becomes middle, for it now occurs in both premises; 3rd, the middle becomes extreme of retained premiss, for not occurring in former conclusion, it does not occur in substituted, and therefore occurs in retained alone of the premises.—THYNNE.

QUESTIONS:—

What is the third operation of the understanding?—What is reasoning?—What do you mean by judgment?—What is a syllogism?—What is the end of syllogistic reasoning?—What do you mean by the "question"?—What is it identical with?—Why is its subject called minor term?—Why is its predicate called the major term?—What common name have they got?—Why is a third term necessary?—What is the name of the third term?—Where is

the middle term found?—How many propositions are made of these three terms?—Name each of them?—What common name have the major and minor propositions got?—How many kinds of matter of a syllogism are there?—What is the proximate matter?—What the remote matter?—What is the form of a syllogism?—Whence arises the diversity between the figures of syllogism?—What is the figure of a syllogism?—What is the number of figures?—Name each of the figures?]

CAPUT II.

REGULÆ syllogismorum ex hisce axiomatibus deducuntur, scil. 1°. Quæcunque uni eidemque tertio conveniunt, ea inter se conveniunt. 2°. Quorum unum tertio convenit, alterum non convenit, ea inter se non conveniunt. 3°. Quorum neutrum convenit tertio, cum quo comparantur, possunt inter se vel convenire, vel non.

Regulæ syllogismorum sunt communes seu generales, et speciales. *Communes* seu *generales*, quæ in omni syllogismo cujuscunque figuræ, locum habent. *Speciales*, quæ in aliquâ figurâ observandæ sunt, non verò in omnibus.

Regulæ generales sunt sex.

1. Medius terminus non potest sumi bis particulariter, sed saltem semel debet esse universalis. Nam si sit bis particularis, sumi potest pro diversis partibus ejusdem totius universalis, ideoque duo sunt medii: sed ex dictis patet extremos cum uno eodemque medio comparari debere.

2. Extremi non possunt in conclusione universalius sumi, quam in præmissis.

Hoc enim foret argumentum a particulari ad universale, quod non valet. (p. 56.)

Cor. ex duabus præcedentibus. Termini universales in præmissis sunt saltem uno plures quam in conclusione. Nam (per reg. 2.) omnis terminus qui est universalis in conclusione, est universalis in præmissis, eâque de causâ tot sunt in præmissis, quot in conclusione: et præterea (per reg. 1.)

medius, qui nunquam ingreditur conclusionem, est saltem semel universalis in præmissis: ergo saltem uno plures sunt in præmissis quam in conclusione.

3. Ex duabus negantibus nihil sequitur. Nam neuter extremus medio convenit, ergo (per ax. 3.) ii possunt inter se convenire, vel non.

4. Ex duabus affirmantibus præmissis non sequitur negativa conclusio.

Si duo sint medii termini, patet ex demonstratione primæ regulæ, nihil sequi: si unicus sit medius, patet ex axiomate primo, extremos inter se convenire: in nullo itaque casu sequi potest eos non convenire.

5. Conclusio sequitur partem debiliorem, vel deteriorem. Hoc est, si una ex præmissis sit negans, conclusio erit negans: et si una sit particularis, conclusio quoque erit particularis. Nam propositio negans est deterior, vel debilior affirmante; et particularis, universali.

Pars 1^a. Si una ex præmissis, sit negans, conclusio erit negans; unus enim extremus medio convenit, alter verò ei non convenit; ergo (per ax. 2.) ii inter se non conveniunt; i. e. conclusio est negans.

Pars 2^a. Si una sit particularis, conclusio erit particularis. Nam si ambæ præmissæ sint affirmativæ, tres erunt termini particulares in præmissis (scil. duo prædicata, et subjectum propositionis particularis); ergo unus tantum erit terminus universalis in præmissis, ergo (per cor.) nullus in conclusione; ergo, subjectum conclusionis erit particulare, ideoque et ipsa conclusio. Si verò, una sit negans, erunt vel A et O, vel E et I; in utroque casu duo sunt termini particulares in præmissis (scil. prædicatum affirmantis, et subjectum particularis); ergo duo tantum universales, ergo (per cor.) unus tantum in conclusione, qui (quoniam conclusio est negativa) erit ejus prædicatum; ergo subjectum conclusionis est particulare, ideoque et ipsa conclusio.

6. Ex duabus particularibus nihil sequitur. Nam si sint ambæ affirmantes, nullus erit in iis terminus universalis, ergo medius erit bis particularis, contra reg. 1. Si verò altera sit negans, et altera affirmans; unus tantum erit terminus universalis in præmissis (scil. prædicatum negantis): et si sequatur conclusio erit negans (per reg. 5.) ideoque ejus prædicatum erit universale; ergo tot erunt termini universales in conclusione, quot sunt in præmissis, contra cor.

CHAP. II.

THE rules of syllogism are derived from the following axioms, viz. 1. Whatsoever things agree with one and the same third, agree with each other. 2. If of two things one agree with a third, and the other disagree with it, they disagree with each other. 3. Two things, of which neither agrees with the third, with which they are compared, may agree or disagree with each other.

The rules of syllogism are of two kinds, *common*, or *general*, and *special*. The common or general rules are those which apply to every syllogism of whatsoever figure. The special rules are those, which are to be observed in some particular figure, but not in all. The general rules are six.

1. The middle term cannot be taken twice particularly, but must be at least once universal. For, if it be twice particular, it may be taken for different parts of the same universal whole, and then there are two middle terms: but from what has been said it is plain, that the extremes ought to be compared with one and the same middle term.

2. The extremes cannot be taken more universally in the conclusion than in the premises. For this would be an argument *a particulari ad universale*, which is invalid (p. 58).

Corollary from the two preceding rules. The number of universal terms in the premises must be at least one more than in the conclusion.¹ For (by 2nd rule) every term that is universal in the conclusion is universal also in the premises; and for that reason there are as many universal terms in the premises, as in the conclusion: but, besides this (by 1st rule) the middle term, which never enters the conclusion, is at least once universal in the premises. Therefore there must be at least one more universal term in the premises, than in the conclusion.²

3. From two negative premises nothing follows. For neither extreme agrees with the middle term; therefore (by 3rd ax.) the extremes may or may not agree with each other.

4. From two affirmative premises a negative conclusion cannot follow. If there be two middle terms, it is plain from the demonstration of the first rule that nothing follows: and if there be but one middle term, it is plain from the first ax. that the extremes agree with each other. In no case therefore can it follow that they do not agree.³

5. The conclusion follows the weaker part: i. e. if one of the premises be negative, the conclusion will be negative; and if one of them be particular, the conclusion also will be particular. (For a negative proposition is inferior to an affirmative, or weaker than it; and a particular weaker than an universal.)

Part 1. If one of the premises be negative, the conclusion will be negative; for one of the extremes agrees with the middle term, and the other disagrees with it; therefore (by 2nd ax.) they disagree with each other.

Part 2. If one of the premises be negative, the conclusion will be particular. For, if both the premises be affirmative, there will be three particular terms in the premises: (viz. the two predicates, and the subject of the particular proposi-

tion :) therefore there will be but one universal term in the premises ; and therefore (by the cor.) none in the conclusion : therefore the subject of the conclusion will be particular, and therefore the conclusion itself. But if one of the premises be negative, they will be either *A* and *O*, or *E* and *I* : in both cases there are two particular terms in the premises (viz. the predicate of the affirmative and the subject of the particular,) therefore but two universal terms : therefore (by the cor.) but one in the conclusion, which must be its predicate, as the conclusion is negative : therefore the subject of the conclusion is particular, and therefore the conclusion itself.

6. From two particular premises nothing follows. For if they be both affirmative, there will be no universal term in them, and therefore the middle term will be twice particular, contrary to 1st rule. But if one of them be affirmative and the other negative, there will be but one universal term in the premises, viz. the predicate of the negative ; and if a conclusion follow, it will be negative, (by 5th rule,) and therefore there will be as many universal terms in the conclusion, as in the premises, contrary to the cor.⁴

COMMENTARY.—CHAP. II.

THE nature of Syllogistic reasoning being this, that from the relation of the two extremes to one and the same third term, (which relation is stated in the premises,) we infer their relation to each other ; it is plain that the middle term must not be taken particularly in both the premises, but must be universal at least in one of them : otherwise there might in fact be two middle terms.

Again, as the conclusion is inferred from the premises, and we cannot argue *a particulari ad universale* ; if either of the extremes be particular in the premiss where it occurs, it must be particular in the conclusion. (Vid. c. 5. p. 2.)

Thus any syllogism will be inconclusive, in which the

middle term is twice particular: or in which an extreme is universal in the conclusion and particular in the premiss. The latter appears from a principle, true in all kinds of reasoning; the former, from the nature of syllogistic reasoning. And these are the two first general rules of syllogism, established independently of the axioms mentioned at the beginning of this chapter.

And thus it appears, that in a legitimate syllogism there must alway be one more universal term in the premises, than in the conclusion: inasmuch as any extreme, that is universal in the conclusion, must be universal also in the premiss; and, besides, the middle term, which does not enter the conclusion, must be once universal in the premises.

It is plain that the number of universal terms in the premises cannot exceed the number in the conclusion, by more than *two*. For there can be but three universal terms in the premises, as one of them (by the 3rd rule) must be an affirmative: and to afford three, one of the premises must be negative. But in this case the conclusion must be negative, (by the 5th rule,) and will therefore have its predicate universal.

According to the third general rule of syllogisms, one of the premises, at least, must be affirmative. For if both be negative, both the extremes disagree with the middle term; and we cannot thence infer whether they agree, or disagree, with each other; i. e. we can draw no conclusion. This is said to appear from the third axiom, which says that, if of two things neither agree with a third, with which they are compared, the two things may either agree or not with each other.

We may here remark that, whenever the minor premiss of a syllogism is negative, the major premiss must be universal. For (by the 3rd rule) it must be affirmative; and by the 2nd rule the major term must be universal in it; and to be so, must be its object.

The first axiom tells us that, if two things agree, both of them, with one and the same third, with which they are compared, they must agree with each other. From this the fourth general rule of syllogism is said to follow: namely, that if both the premises be affirmative, the conclusion cannot be negative; because in that case, if any conclusion follow, both the extremes agree with the middle term.

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If one of the premises be negative, the other (by the third rule) must be affirmative: and then one of the extremes agrees with the middle term, and the other disagrees with it. In this case, according to the second axiom, the extremes must disagree with each other; i. e. the conclusion must be negative. And this is the first part of the fifth general rule of syllogisms.

The second part of that rule asserts, that if one of the premises be particular, the conclusion must be particular. This appears from the corollary to the first rules. For if one of the premises be particular, as one of them also must be affirmative, there can be at most but two universal terms in them; namely, the subject of the universal, and the predicate of the negative premiss, if one of them be negative. But if they be both affirmative, there will be but one universal term in them. In the latter case there will be no universal term in the conclusion; and in the former case, there can be but one, which must be the predicate, as the conclusion must in that case be negative. In either case, therefore, the subject of the conclusion will be particular.

Thus, according to the fifth general rule, the conclusion must *follow the weaker part*; or, be negative, if either of the premises be negative; particular, if either of them be particular.

The latter part of the 5th rule may be presented advantageously in a somewhat different form: viz. If either of the premises be particular, the minor term must be particular in the minor premiss, and therefore in the conclusion. For if the mode be affirmative, there is then but one universal term in the premises, which must be the middle. And if the mode be negative, there are but two universal terms in the premises, one of which must be the middle term, and the other the major term. Therefore, in either case, the minor term is particular in the minor premiss.—In like manner, it is easy to prove, by a converse process of reasoning, that if the minor term be universal in the minor premiss, both the premises must be universal. For, if they be both affirmative, the middle term must be universal in the major premiss, and its subject; and the minor term must be the subject of the minor premiss. (This therefore can happen only in the first figure.) But if either of them be negative, *the major term must be universal in the major premiss, as it*

will be so in the conclusion ; and the middle term must be once universal. Therefore the premises must be A E, or E A.

By the sixth general rule of syllogisms, one at least of the premises must be universal ; which, in like manner, is shown from the two first rules. For, if they be both particular, there will either be no universal term in the premises, namely, when they are both affirmative ; and then the middle term will be taken twice particularly ; or there will be but one, namely, when one of them is negative ; and then the conclusion also should be negative, and its predicate therefore universal : so that there would be as many universal terms in the conclusion, as in the premises.

Thus it appears, that a syllogism will be illegitimate in its form, or inconclusive, 1. if the middle term be particular in both the premises ; or 2. if either extreme be particular in the premiss, where it occurs, and universal in the conclusion ; or 3. if both the premises be negative ; or 4. if they be both particular ; or 5. if both of them be affirmative, and the conclusion negative ; or 6. if one of them be negative, and the conclusion affirmative ; or one of them be particular, and the conclusion universal.

But it must be acknowledged, that specious as the reasoning appears in the three last general rules, its foundation is weak ; the axioms, upon which it is founded, not having the requisite precision and self-evidence. They are borrowed from Mathematics ; in which we may infer with certainty the equality of two *quantities*, that are both of them equal to a third ; and the inequality of two quantities, one of which is equal, and the other unequal, to a third : but cannot infer their equality or inequality, if both of them be greater, or both of them less, than a third quantity with which they are compared.

But clear as these principles are in Mathematics, yet when transferred, by analogy, to the agreement or disagreement of terms or ideas in affirmative or negative propositions, they by no means have that definite and certain meaning, which is necessary in principles, that are taken for the basis of such a superstructure, as the doctrine of syllogisms.

Aristotle had too much penetration to rest the doctrine on this foundation ; and we shall give a view of his process, in the fifth chapter of this part. I could wish that no other method but his were laid before the student.

[NOTES—PART III.—CHAP. II. :—

1. To determine *how many more universal terms may be in the premises than in the conclusion.* This excess can never be more than two, for there cannot be more than three universal terms in the premises; and that there should be three, one premiss should be negative, and therefore the conclusion, which has one universal term at least; and that the excess may be two, the premises should be E and A, and the conclusion O; or if the mode be affirmative, the premises must be A and A, and conclusion I, in order to preserve the required excess.

That the excess may be one universal term, either both the premises shall not, or the conclusion shall be universal.

2. To determine *how many particular terms may be in the premises more than in the conclusion.* The greatest number of particulars that can occur in premises are three, when both are affirmative and one particular, and then the universal term that occurs in the premises must be the middle term, and therefore there are two particular terms in the conclusion. If there are but two particular terms in the premises, both are affirmative, or one particular, and so in either case the conclusion has a particular term. The excess is never more than one.

3. *If the middle term be twice universal, how far the mode and figure of the syllogism are determinable.* If the mode be negative, both the terms of the major premiss are universal, and this premiss is E and the minor A, and the minor term is predicate and particular in it, therefore also in the conclusion, which conclusion, therefore, is O. The mode, therefore, is E, A, O, and the figure is limited by the situation of the minor term in its premiss to the third and fourth. In like manner, if the mode be affirmative, it is A, A, I, in the third figure. To generalize then,—the middle is twice universal when the premises are universal, and the conclusion particular; and yet the quantity of no extreme lessened in the conclusion.—THYNNE.

4. *Given the three propositions of a legitimate syllogism to determine them.* Except in (*Bramantip*) no extreme receives diversity of quantity, but the middle always does, unless when universal premises conclude particularly. Unless, therefore, one only of the given propositions be particular, the middle term is determinable, and consequently the conclusion, which does not admit this term, and thence the several premises. If one only be particular, that shall be the conclusion.—THYNNE.

QUESTIONS :—

What are the axioms of syllogisms?—How many fold are the rules of syllogisms?—How many general rules?—What is meant by special rules?—What is the first general rule?—What is its proof?—What is the second general rule?—Its proof?—What corollary is deduced from these two rules?—What is the third general rule?—Prove it?—What is the fourth general rule?—Its proof?—What is the fifth general rule?—Prove both parts of it?—What is the sixth general rule?—Prove it?—How many universal terms, at

most, may the premises have more than the conclusion?—How many particular terms?—What objections are there to found the general rules on the axioms?]

CAPUT III.

REGULÆ speciales syllogismorum in primâ figurâ, sunt duæ.

1. Minor debet esse affirmans. Nam si sit negans, major erit affirmans, (per reg. 3.) et ideo ejus prædicatum erit particulare; et conclusio erit negans (per reg. 5.) ejusque prædicatum universale; sed in primâ figurâ major propositio et conclusio habent idem prædicatum, scil. majorem terminum; ergo hic terminus foret particularis in præmissis, et universalis in conclusione, contra reg. gener. 2.

2. Major debet esse universalis. Nam (per præced.) minor est affirmans, ergo medius terminus (quia est ejus prædicatum) erit in eâ particularis; et inde (per reg. gen. 1.) erit universalis in majore, cujus est subjectum, ergo reddit majorum universalem.

Regulæ speciales syllogismorum in secundâ figurâ sunt duæ.

1. Alterutra præmissarum (ideoque et conclusio) debet esse negativa. Nam in hac figurâ medius est utriusque præmissæ predicatum; si ergo illæ forent ambæ affirmantes, medius foret bis particularis, contra reg. gener. 1.

2. Major debet esse universalis. Nam (per præced.) conclusio est negans, ergo ejus prædicatum (qui est major terminus) erit universale, ergo major terminus erit universalis in majore propositione; sed est ejus subjectum, ideoque reddit propositionem universalem.

Regulæ speciales syllogismorum in tertiâ figurâ sunt duæ.

1. Minor debet esse affirmans. Probatur eodem modo, quo reg. 1. figuræ primæ.

2. Conclusio est particularis. Nam (per præced.) minor est affirmans, ergo ejus prædicatum est particulare; sed in tertiâ figurâ, prædicatum minoris est minor terminus, qui ergo erit particularis in conclusione, ideoque reddit ipsam conclusionem particularem.

Has tres figuras agnoscit Aristoteles, non quartam, utpote modo minus naturali terminos disponentem. Quartam verò Galenus introduxit, quæ exinde Galenica appellatur.

Regulæ speciales syllogismorum in quartâ figurâ sunt tres.

1°. Si major sit affirmans, minor debet esse universalis. Nam si major sit affirmans, ejus prædicatum (scil. medius terminus) erit particulare, ergo (per reg. gener. 1.) medius erit universalis in minore, ubi est subjectum, et ideo reddit minorem ipsam universalem.

2°. Si minor est affirmans, conclusio erit particularis. Probatur ut reg. 2. tertiæ figuræ.

3°. In modis negativis (hoc est, si quævis propositio sit negans,) major erit universalis. Probatur ut reg. 2. secundæ figuræ.

Harum figurarum, prima cæteris est præponenda: tum quia in eâ manifestiùs, quam in cæteris, apparet necessitas consequentiæ (ut infra ostendetur); tum quia in eâ omnia conclusionum genera deduci possunt: sed in secundâ figurâ, conclusio est semper negativa; in tertiâ particularis; et in quartâ, vel negativa, vel particularis: quæ omnia ex regulis specialibus constant: in solâ itaque primâ figurâ conclusio potest esse universalis affirmans.

Ex unius syllogismi præmissis, sæpe deduci possunt plures conclusiones: una immediatè; reliquæ mediâtè nempe conversione, vel subalternatione. Ex. gr. Si syllogismi conclusio sit *omnis homo est animal*; ex iisdem præmissis sequuntur hujus conversa, *aliquod animal est homo*; et subalterna, *aliquis homo est animal*.

ADDENDUM.

In solâ primâ figurâ deduci potest conclusio universalis affirmans.

Nam ut conclusio sit affirmans, necesse est utramque præmissam esse affirmantem, et inde utriusque prædicatum esse particulare; et ut conclusio sit universalis, necesse est minorem terminum universalem esse in minore propositione, cujus proinde subjectum erit, mediusque terminus prædicatum: Medius ergo erit particularis in minore propositione et inde universalis erit in majore, eâque de causâ erit ejus subjectum. Quoniam ergo medius terminus est subjectum majoris propositionis, et prædicatum minoris, Syllogismus erit in primâ figura.

CHAP. III.

THE special rules of syllogisms in the first figure are two.

1. The minor must be affirmative. For if it be negative, the major will be affirmative (by 3d rule), and therefore its predicate will be particular; and the conclusion will be negative (by 5th rule), and its predicate universal: but in the first figure the major proposition and conclusion have the same predicate, viz. the major term. This term, therefore, would be particular in the premiss, and universal in the conclusion: contrary to the 2nd general rule.

2. The major must be universal. For (by the preceding rule) the minor is affirmative; and, therefore, the middle term, as its predicate, will be particular in it. Therefore (by 1st gen. rule) it will be universal in the major; whose subject it is, and therefore renders the major universal.

The special rules of syllogisms in the 2nd figure are two.

1. One or other of the premises (and therefore the conclusion also) must be negative. For in this figure the middle term is the predicate of both premises: if, therefore, they were both affirmative, the middle would be twice particular; contrary to the 1st gen. rule.

2. The major must be universal. For (by the preceding rule) the conclusion is negative, and, therefore, its predicate—the major term—will be universal. Therefore the major term must be universal in the major proposition (by 2nd general rule); but it is its subject, and therefore renders that proposition universal.

The special rules of syllogisms in the third figure are two.

1. The minor must be affirmative. It is proved in the same way, as the 1st rule of the first figure.

2. The conclusion must be particular. For (by the preceding rule) the minor is affirmative, and therefore its predicate is particular. But in the third figure, the predicate of the minor proposition is the minor term, which will therefore be particular in the conclusion; and therefore will render the conclusion itself particular.

These three figures Aristotle acknowledges, but not the fourth, as disposing the terms in a less natural order. But Galen introduced the fourth, which is thence called the Galenic figure.

The special rules of syllogisms in the fourth figure are three.¹

1. If the major be affirmative, the minor must be universal. For if the major be affirmative, its predicate—the middle term—will be particular; therefore (by 1st general rule) the middle term must be universal in the minor, where it is the subject, and therefore renders the minor itself universal.

2. If the minor be affirmative, the conclusion must be *particular*. It is proved as the 2nd rule of the third figure.

3. In negative modes (i. e. if any proposition be negative) the major must be universal. It is proved as the 2nd rule of the second figure.

Of these figures, the first is to be preferred to the rest, both because the necessity of the consequence more immediately appears in it, than in the rest, (as will be shown hereafter), and because in it all kinds of conclusions can be drawn: whereas, in the second figure, the conclusion is always negative; in the third, particular; and in the fourth, either negative or particular; all of which appears from the special rules. In the first figure alone, therefore, the conclusion can be an universal affirmative.

The same thing is thus proved in the Addenda. That the conclusion of a syllogism may be affirmative, it is necessary that both premises be affirmative, and therefore that the predicates of both be particular. And that the conclusion may be universal, it is necessary that the minor be universal in the minor proposition, whose subject therefore it must be, and the middle term is predicate. The middle term therefore will be particular in the minor proposition; and hence it will be universal in the major, and therefore must be its subject. Since then the middle term is the subject of the major proposition, and the predicate of the minor, the syllogism must be in the first figure.

From the premises of one syllogism there can often be deduced several conclusions: one immediately; the others mediately; namely, by conversion, or subalternation. E. gr. If the conclusion of a syllogism be *Every man is an animal*, from the same premises there follow its converse, *Some animal is a man*; and its subalternate, *Some man is an animal*.²

COMMENTARY.—CHAP. III.

THIS chapter might have been wholly omitted. It states

the *special* rules of syllogisms; or, those which belong peculiarly to each of the four figures. And they are all proved, by showing that if the special rule be not observed in the figure to which it belongs, one of the two first *general* rules will be violated; i. e. either the middle term will be particular in both the premises; or one of the extremes will be universal in the conclusion, and particular in the premiss, where it occurs.

To demonstrate this, you only need to have distinctly in your view the position of the terms in each figure. Thus—in the first figure, where the middle term is the subject of the major proposition and predicate of the minor, the minor proposition must not be negative: for if it be, the major term will be universal in the conclusion, as the predicate of a negative proposition; and it will be particular in the major proposition, as the predicate of an affirmative: contrary to the 2nd general rule.

It follows from this that, in the first figure, the major proposition must not be particular; else the middle term will be particular in it, as its subject; and particular also in the minor, as the predicate of a proposition, which it has been shown must be affirmative; contrary to the 1st general rule.—Thus it appears that any syllogism in the first figure, will be illegitimate in its form, if the minor be negative, or if the major be particular.

In the second figure, the middle term being the predicate of both the premises, one of them must be negative; else the middle term will be particular in both, contrary to the 1st general rule. In this figure, therefore, we cannot draw an affirmative conclusion.

And as the conclusion must be negative, the major term will be universal in it; and therefore, by the 2nd general rule, must be universal also in the major proposition, where it is the subject. This premiss, therefore, must be universal in the second figure; and in it, any syllogism will be illegitimate, in which both the premises are affirmative, or the major particular.

In the third figure, where the middle term is the subject of both the premises, the minor must be affirmative, else the major term would be universal in the conclusion, and particularly in the major proposition; as has been shown, in *demonstrating the same special rule of the first figure.*

The minor proposition being affirmative, the minor term is particular in it, as its predicate; and must, therefore, (by the 2nd general rule), be particular in the conclusion, which cannot, therefore, be universal in this figure.—So that any syllogism in the third figure will be illegitimate, if the minor be negative, or the conclusion universal.

In the fourth figure, where the middle term is the predicate of the major proposition, and subject of the minor, if the major be affirmative, the minor must be universal, else the middle term would be particular in both the premises, (contrary to the 1st general rule;) in the major, as the predicate of an affirmative; and in the minor, as the subject of a particular proposition.

If the minor be affirmative, the conclusion must be particular, else the minor term would be particular in the minor proposition, and universal in the conclusion, (contrary to the 2nd general rule;) as has been shown in the corresponding rule of the third figure.

If either of the premises be negative, the major must be universal, else the major term would be particular in the major proposition, and universal in the conclusion, (contrary to the same general rule;) as has been shown in the corresponding rule of the second figure.—So that any syllogism in the fourth figure will be illegitimate, if the major be affirmative and the minor particular; or if the minor be affirmative and the conclusion universal, or if the conclusion be negative and the major particular.

The rules of this figure are hypothetical, because we cannot, as in the other figures, absolutely determine the *quality* of either premiss, as they may both of them be affirmative, or may either of them be negative.

Observe, that all the special rules of the four figures are of such a nature, that whenever one of them is violated, there is a violation also of either the 1st or 2nd general rule.

It appears also, that it is in the first figure alone, we can draw an universal affirmative conclusion. This is otherwise proved in the Addenda, by showing that, if the conclusion of a syllogism be an universal affirmative proposition, the middle term must be the subject of the major and predicate of the minor. For the minor term, being universal in the conclusion, must (by the 2nd general rule) be also universal in the minor proposition. And both the premises

being affirmative (else the conclusion could not be so), the minor term cannot be the predicate of the minor proposition, but must be its subject. The middle term therefore must be the predicate of the minor; and being particular there, as the predicate of an affirmative, it must (by the 1st general rule) be universal in the major proposition: and that premiss also being affirmative, the middle term cannot be its predicate, but must be its subject. Therefore the syllogism which has an universal affirmative conclusion, must be in the first figure.

Observe lastly, that as in some of the figures the conclusion must be negative, and in some particular; the only conclusion that can be drawn in *all* the figures is a particular negative.

So far, I have expressed myself according to the opinions commonly current. But the student who wishes really to understand the subject should observe that every conclusion which can be drawn in the first figure may also be drawn in the second and fourth, by the aid of that transformation of propositions which I have explained in page 48. Thus if I want to prove in the second or fourth figure, that *All men are rational*, I have only to transform it into the equivalent propositions, *No man is irrational*. In the third figure, certainly, we cannot draw an universal conclusion.

[NOTES—PART III.—CHAP. III. :—

1. It is peculiar to the fourth figure that the quantity or quality of no premiss is absolutely fixed, and that therefore the rules of it are hypothetical. On this account also there are three: the one arguing from the major, another from the minor, and the third from the conclusion.

2. *If, when the conclusion is substituted for the major premiss, the resulting premises are legitimate, to investigate their figure.* The arrangement of the terms of the new major limits the figure to the first and third; but to be the first, the original figure, that the new minor may be duly arranged, should be the third or fourth, and in either the conclusion would be particular; in the fourth, because the minor is affirmative, and therefore also the new major particular, contrary to the 2nd rule of first. The result is therefore confined to the third figure and original, either first or second, and consequently the former major is universal, and retained minor is A; therefore, former mode is altogether A, A, A, affirmative, or E, A, E, negative, and resulting A, A, I, or E, A, O.—THYNNE.

Let it be required to determine the affirmative mode in which the

minor term is universal in its premiss. The conclusion is universal, and therefore A, and consequently the mode A, A, A.—THYNNE.

If there be two universal terms in the premises more than in the conclusion, and middle be once particular, to determine the mode. It is that one extreme is universal in the premiss, and particular in the conclusion, and thus that the mode is A, A, I, in the fourth figure.

QUESTIONS:—

What are the special rules of the first figure?—Why must the minor be affirmative?—Why the major universal?—Why is the special rule regarding minor mentioned before that regarding the major?—What are the special rules of the second figure?—Why must one of the premises be negative?—Why must the major be universal?—What are the special rules of the third figure?—How many figures were recognized by Aristotle?—What other name has the fourth figure got?—What are the special rules of the fourth figure?—Prove the special rules of the fourth figure?—Why are the rules of the fourth figure *hypothetical*?—Which of the figures is to be most preferred?—In which figure can an universal affirmative conclusion be drawn?]

CAPUT IV.

MODUS syllogismi est legitima propositionum, secundum quantitatem et qualitatem, determinatio. Modi sunt in univ-
ersum 64. Nam major syllogismi potest esse quævis ex
quatuor propositionibus, A, E, I, O: harum cuilibet adjungi
potest quadruplex minor; unde 16 sunt paria præmissarum;
quorum singulis quoque adjungi potest quadruplex conclu-
sio; unde 64 sunt modi. Ex his excluduntur per regulas
generales 52; per regulas speciales, unus I E O; et unus A
E O, quia inutilis est, nam si præmissæ sint A et E, conclu-
sio erit E. Supersunt ergo 10; quorum sex bis repetuntur,
in diversis scil. figuris; et unus, *quater*, scil. in omnibus.
Modi itaque concludentes sunt 19:

Quatuor in primâ figurâ. Barbara, Celarent, Darii, Ferio.

Quatuor in secundâ. Cesare, Camestres, Festino, Baroko.

Sex in tertiâ. Darapti, Felapton, Disamis, Datisi, Bo-
kardo, Ferison.

Quinque in quartâ. Bramantip, Camenes, Dimaris, Fe-
sapo, Fresison.

Harum vocum singulæ syllabæ, singulis propositionibus syllogismi præfiguntur; et vocalis in syllabâ determinat quantitatem et qualitatem propositionis cui præfixa est. Sic syllogismi in Celarent, major propositio est universalis negans: minor, universalis affirmans; et conclusio, universalis negans.

Exempla syllogismorum in modis primæ figuræ.

- Bar *Omne animal sentit*;
 ba *Omnis homo est animal*;
 ra. Ergo, *Omnis homo sentit*.
- Ce *Nullum animal est lapis*;
 la *Omnis homo est animal*;
 rent. Ergo, *Nullus homo est lapis*.
- Da *Omne animal sentit*;
 ri *Aliquod vivens est animal*;
 i. Ergo, *Aliquod vivens sentit*.
- Fe *Nullum animal est lapis*;
 ri *Aliquod corpus est animal*;
 o. Ergo, *Aliquod corpus non est lapis*.

In modis secundæ figuræ.

- Ces *Nullus lapis est animal*;
 a *Omnis homo est animal*;
 re. Ergo, *Nullus homo est lapis*.
- Cam *Omnis homo est animal*;
 es *Nullus lapis est animal*;
 tres. Ergo, *Nullus lapis est homo*.
- Fes *Nullus lapis est animal*;
 ti *Aliquod corpus est animal*;
 no. Ergo, *Aliquod corpus non est lapis*.
- Ba *Omnis homo est animal*;
 rok *Aliquod vivens non est animal*;
 o. Ergo, *Aliquod vivens non est homo*.

In modis tertiæ figuræ.

- Da *Omne animal sentit* ;
 rap *Omne animal vivit* ;
 ti. Ergo, *Quoddam vivens sentit*.
 Fe *Nullum animal est lapis* ;
 lap *Omne animal sentit* :
 ton. Ergo, *Quoddam sentiens non est lapis*.
 Dis *Aliquod animal est homo* ;
 am *Omne animal sentit* ;
 is. Ergo, *Quoddam sentiens est homo*.
 Da *Omne animal sentit* ;
 tis *Aliquod animal est homo* ;
 i. Ergo, *Aliquis homo sentit*.
 Bok *Aliquod animal non est homo* ;
 ar *Omne animal sentit* ;
 do. Ergo, *Aliquod sentiens non est homo*.
 Fe *Nullum animal est lapis* ;
 ris *Aliquod animal est homo* ;
 on. Ergo, *Aliquis homo non est lapis*.

In modis quartæ figuræ.

- Bram *Omnis homo est animal* ;
 an *Omne animal sentit* ;
 tip. Ergo, *Aliquod sentiens est homo*.
 Cam *Omnis homo est animal* ;
 en *Nullum animal est lapis* ;
 es. Ergo, *Nullus lapis est homo*.
 Dim *Aliquod sentiens est animal* ;
 ar *Omne animal vivit* ;
 is. Ergo, *Aliquod vivens sentit*.
 Fes *Nullus lapis est animal* ;
 ap *Omne animal vivit* ;
 o. Ergo, *Quoddam vivens non est lapis*.

Fres *Nullus lapis est animal;*
 is *Aliquod animal est homo;*
 on. *Ergo, Aliquis homo non est lapis.*

CHAP. IV.

THE *mode* of a syllogism is the legitimate determination of the propositions, with respect to quantity and quality. There are in all 64 modes. For the major of the syllogism may be any of the four propositions, A, E, I, O. To each of these may be joined a fourfold minor, whence there arise 16 different pairs of premises: to each of which also may be subjoined a fourfold conclusion: whence 64 modes. Of these, 52 are excluded by the general rules; one (IEO) by the special rules; and one (AEO) because it is useless; for if the premises be A and E, the conclusion will be E. There remain therefore ten; six of which are twice repeated, namely, in different figures; and one four times, namely, in all the figures. Therefore there are 19 conclusive modes: four in the first figure, viz. Barbara, Celarent, Darii, Ferio—four in the second, viz. Cesare, Camestres, Festino, Baroko—six in the third, viz. Darapti, Felapton, Disamis, Datisi, Bokardo, Ferison—five in fourth, viz. Bramantip, Camenes, Dimaris, Fesapo, Fresison.¹

The several syllables of these words are prefixed to the several propositions of the syllogisms; and the vowel in the syllable determines the quantity and quality of the proposition to which it is prefixed. Thus of a syllogism in the mode *Celarent*, the major proposition is an universal negative, the minor an universal affirmative, and the conclusion an universal negative.²

Examples of syllogisms in the modes of the first figure.

Bar *Every animal has feeling ;*

ba *Every man is an animal ;*

ra \therefore *Every man has feeling.*

Ce *No animal is a stone ;*

la *Every man is an animal ;*

rent \therefore *No man is a stone.*

Da *Every animal has feeling ;*

ri *Some living things are animals ;*

i \therefore *Some living things have feeling.*

Fe *No animal is a stone ;*

ri *Some bodies are animals ;*

o \therefore *Some bodies are not stones.*

In the modes of the second figure.

Ces *No stone is an animal ;*

a *Every man is an animal ;*

re \therefore *No man is a stone.*

Cam *Every man is an animal ;*

es *No stone is an animal ;*

tres \therefore *No stone is a man.*

Fes *No stone is an animal ;*

ti *Some bodies are animals ;*

no \therefore *Some bodies are not stones.*

Ba *Every man is an animal ;*

rok *Some living things are not animals ;*

o \therefore *Some living things are not men.*

In the modes of the third figure.

Da *Every animal has feeling ;*

rap *Every animal has life ;*

ti \therefore *Some living things have feeling.*

Fe *No animal is a stone ;*

lap *Every animal is sentient ;*

ton \therefore *Some sentient things are not stones.*

Dis *Some animals are men ;*
 am *Every animal is sentient ;*
 is \therefore *Some sentient things are men.*

Da *Every animal has feeling ;*
 tis *Some animals are men ;*
 i \therefore *Some men have feeling.*

Bok *Some animals are not men ;*
 ar *Every animal is sentient ;*
 do \therefore *Some sentient things are not men.*

Fe *No animal is a stone ;*
 ris *Some animals are men ;*
 on \therefore *Some men are not stones.*

In the modes of the fourth figure.

Bram *Every man is an animal ;*
 an *Every animal is sentient ;*
 tip \therefore *Some sentient things are men.*

Cam *Every man is an animal ;*
 en *No animal is a stone ;*
 es \therefore *No stone is a man.*

Dim *Some sentient things are animals ;*
 ar *Every animal has life ;*
 is \therefore *Some living things are sentient.*

Fes *No stone is an animal ;*
 ap *Every animal has life ;*
 o \therefore *Some living things are not stones.*

Fres *No stone is an animal ;*
 is *Some animals are men ;*
 on \therefore *Some men are not stones.*³

COMMENTARY.—CHAP. IV.

WHEN Logicians defined the mode of a syllogism to be,

"the *legitimate* determination of the propositions as to quantity and quality;" they intended to exclude the *illegitimate* modes from the rank of syllogisms. Such they called *paralogisms*; being obviously vicious in their form.

As each of the three propositions may be any of the four kinds, either an universal affirmative, or an universal negative, or a particular affirmative, or a particular negative: it appears that there may be conceived 64 possible varieties, in the propositions of a syllogism, as to their quantity and quality. These are exhibited in the annexed scheme; where the four first vowels are employed, to denote the four kinds of propositions above enumerated.

But of these 64 varieties, only 11 are found to be modes of syllogism; all the rest, to the number of 53, violating some of the general rules; and being therefore paralogisms.

In the compendium, 52 are said to be rejected by the general rules; and one, IEO, by the special. But the special rules being all derived from the general, it is obvious that any mode, which is rejected from *all* the figures by their special rules, must violate some general rule. And accordingly, in that mode, the second general rule is violated; the major term being universal in the conclusion, as the predicate of a negative, and particular in the major proposition, as either the subject or predicate of a particular affirmative.

The mode AEO, though legitimate, is not used: for the minor term being universal in the minor proposition, whether it be the subject or the predicate, may be universal also in the conclusion; so that wherever we can employ the premises AE, we may draw an universal negative conclusion; and it is therefore *useless* to draw a particular.

It is not so with EAO; for unless the minor term be the subject of the minor proposition, (i. e. unless the syllogism be in the first or second figure,) we could not draw an universal conclusion from the premises EA, without violating the second general rule.

The following, therefore, is a list of the ten modes of syllogism, which are legitimate and used in argument, AAA, AAI, AEE, AII, AOO, EAE, EAO, EIO, IAI, OAO.

But of these, it is plain that all cannot be used legitimately in each figure. Thus, none of them can be used in the first figure, but such as have an universal major and

affirmative minor; of which there are six, viz. AAA, AAI, AII, EAE, EAO, EIO. Of them, AAI and EAO would be useless in the first figure; as the minor term, being universal in the minor proposition, may be universal also in the conclusion. There are therefore only four used in the first figure; viz. AAA, AII, EAE, EIO.

In the second figure, none can be used legitimately, but those whose conclusion is negative, and whose major is universal; of which there are five; viz. AEE, AOO, EAE, EAO, EIO. And of these, EAO would be useless in this figure. There are, therefore, four used in it: viz. AEE, AOO, EAE, EIO.

In the third figure, none can be used but those, whose minor is affirmative, and whose conclusion is particular; of which there are six: viz. AAI, AII, EAO, EIO, IAI, OAO. None of these are useless; because though the minor be A, yet the minor term is particular in it, as its predicate; and must therefore be particular in the conclusion.

In the fourth figure, AAA, EAE, and OAO, would violate the second general rule: AII and AOO, the first. There remain, therefore, five, which are legitimate and used; viz. AAI, AEE, EAO, EIO, and IAI.

Observe, that in the fourth figure, when the minor is particular, the major must be an universal negative. For it must be universal, by the sixth rule; and the middle term, being particular in the minor, must be universal in the major; but that it may be so, this premiss must be negative.

Observe also, that AAI of the fourth figure is the only mode in which the major term can be universal in the major premiss, and particular in the conclusion. For, that the major term may be particular in the conclusion, the mode must be affirmative, and therefore the predicates of both premises particular: therefore, that the major term may be universal in the major premiss, it must be the subject of that premiss; in which therefore the middle term is particular: hence the middle term must be universal in the minor premiss, and, to be so, must be its subject.

It thus appears, that there are nineteen different varieties of legitimate syllogisms in use;—that one mode, EIO, is used in all the four figures;—that EAO might be *legitimately used* in them all, but would be useless in the first and

second figures:—that AAA is peculiar to the first, AOO to the second, and OAO to the third.

Exclusive of EIO common to all the figures, the first and fourth figures have no mode in common; nor the second and third:—the only mode common to the first and second figures is necessarily EAE: the only one common to the first and third is AII:—the fourth figure has one mode common to the second, AEE; and three common to the third, AAI, IAI, and EAO.

The number of legitimate and useful modes, in the several figures, may be thus determined *a priori*. In the first figure we may have any of the four conclusions, A, E, I, or O. But each of these can be afforded legitimately and usefully by only one set of premises: since the major must be universal, and the minor affirmative; and since the minor term is the subject of the minor premiss. In the second figure we can draw only the conclusions, E or O: but each of these is afforded legitimately by two sets of premises; as either major or minor may be negative premiss.—In the third figure we can have but two conclusions, I or O: but each of these is afforded legitimately and usefully by three sets of premises; since either the major or minor may be particular, and since the minor term is the predicate of the minor premiss. In the fourth figure we have three conclusions, E, I, or O: of which E can be afforded only by the premises AE; but I and O legitimately and usefully by two sets of premises.

We have thus ascertained the legitimate modes by observing those out of the 64 possible varieties, which do not contradict any of the general rules: and in like manner have ascertained the modes, which can be legitimately used in each figure. But the whole of this reasoning, as we have already observed, proceeds upon a weak foundation; so far as those general rules are employed in it, which are derived from the axioms.

Even if we admit that, according to those axioms, we may in two cases infer, from the quality of the premises, what the quality of the conclusion ought to be; and that in another case we cannot draw this inference; yet, where we can, it does not appear, from the axioms, which of the extremes ought to be predicated of the other: and we are therefore left uncertain about the legitimacy of the conclusion.

This objection, however, does not lie against Aristotle's method of establishing the doctrine of syllogisms; to which we proceed in the following chapter.

SCHEME

Referred to in the preceding Chapter. The annexed numbers denote the figure or figures in which the mode is legitimate. Those which have no numbers annexed to them, are illegitimate; violating some of the general rules.

AAA 1.	AEA	AIA	AOA	EAA	EEA	EIA	EOA	IAA	IEA	IIA	IOA	OAA	OEA	OIA	OOA
AAE 2. 4.	AEE	AIE	AOE	EAE	EEE	EIE	EOE	IAE	IEE	IIE	IOE	OAE	OEE	OIE	OOE
(1) AAI 3. 4.	AEI	AII	AOI	EAI	EEI	EII	EOI	IAI	IEI	III	IOI	OAI	OEI	OII	OOI
AA- (AEO) 2. 4.	useless	AIO	AOO	EAO	EEO	EIO	EOO	IAO	IEO	IIO	IOO	OAO	OEO	OIO	OOO

3.

3. 4.

1 2 3 4

(1. 2.)

3. 4.

2.

1. 3.

1. 2.

[NOTES—PART III.—CHAP. IV.:—

1. THE mode AEO is useless, as the minor term is universal in the minor premiss, whether subject or predicate, it may be universal in the conclusion; but this mode is not illegitimate.

2. There are no useless modes in the third figure, for an universal conclusion cannot be drawn in that figure.

3. The mode AAA belongs to the first figure; it is excluded from the second, because the mode is affirmative; from the third, because the conclusion is universal; and from the fourth, because in that figure the conclusion is always particular, when the minor is affirmative.

QUESTIONS:—

What is the mode of a syllogism?—What are the number of the modes?—How many modes are excluded by the general rules?—How many by the special rules?—How many conclusive modes are there?—How many modes are in the first figure?—How many in the second?—How many in the third?—How many in the fourth?—What is the use of names, and what do the vowels in them mean?]

CAPUT V.

HANC syllogismorum doctrinam aliunde deducit Aristoteles, nempe ex regulis de omni, et de nullo: i. e. Quicquid de aliquo universali affirmatur universaliter, id etiam affirmatur de omnibus quæ sub isto universali continentur: et quicquid de aliquo universali negatur universaliter, id etiam negatur de omnibus quæ sub isto universali continentur. Sic quicquid affirmari potest, vel negari de *omni animali*, id etiam affirmari potest, vel negari de *omni homine*, ut patet.

Ex hisce principiis immediatè percipitur necessitas consequentiæ in primâ figurâ. Nam in modis affirmativis, major terminus affirmatur de toto medio, et minor continetur sub medio; ergo, major affirmandus est de minore; et similiter in modis negativis.

In reliquis vero figuris, quamvis sequatur extremos inter se convenire, ex eo quod uni eidemque tertio conveniunt;

non tamen ex eorum dispositione in præmissis, statim patet, uter sit de altero prædicandus. Has ob causas primam figuram perfectam nominat; reliquas, imperfectas: et certitudinem conclusionis in reliquis figuris, deducit ex certitudine conclusionis in primâ; ostendendo, earundem vi præmissarum, eandem conclusionem per reductionem colligi posse in primâ figurâ.

Reductio syllogismi est imperfecti modi in perfectum mutatio. Syllogismus, cujus modus est imperfectus, appellatur *reducendus*; et cujus modus est perfectus, *reductus*.

Reductio est vel ostensiva, vel ad impossibile. *Ostensiva* est cum in primâ figurâ deducitur syllogismi reducendi ipsa conclusio, vel eam inferens. Reductio *ad impossibile* est cum ex alterâ præmissarum reducendi, et contradictione conclusionis ejus, deducitur in primâ figurâ, conclusio quæ alteri præmissæ contradicit.

Utriusque praxin docent nomina modorum. Nam, 1°. eadem est litera initialis modi syllogismi reducendi et reducti. Sic Cesare, reductitur ad Celarent; Festino, ad Ferio; Baroko ad Barbara, &c.

2°. S, vel P, denotat convertendam esse propositionem, cui præfixa est vocalis præcedens; S, simpliciter; et P, per accidens: S, ergo semper sequitur E vel I; et P, sequitur A in præmissis, sed I in conclusione. Sic in reducendo modo Festino, major est simpliciter convertenda: et in reducendo Felapton, minor est convertenda per accidens.

3°. M, ubivis in modo occurrens, denotat præmissas esse transponendas. Sic in reducendo Disamis, minor propositio reducendi, fit major reducti, et vice versâ.

4°. K, denotat contradictoriam conclusionis substituendam esse loco præmissæ, cui præfixa est vocalis præcedens. Sic in reducendo Baroko, contradictoria conclusionis substituenda est, loco minoris propositionis reducendi.

Exempla reductionis ostensivæ.

Sit syllogismus reducendus in Cesare, ut

Ces *Nullus lapis est animal;*

a *Omnis homo est animal;*

re. Ergo, *Nullus homo est lapis.*

Major propositio est convertenda simpliciter: unde fit syllogismus reductus in Celarent.

Ce *Nullum animal est lapis;*

la *Omnis homo est animal;*

rent. Ergo, *Nullus homo est lapis.*

Sit syllogismus reducendus in Camestres, ut

Cam *Omnis homo est animal;*

es *Nullus lapis est animal;*

tres. Ergo, *Nullus lapis est homo.*

Primò minor est simpliciter convertenda, dein transponendæ sunt præmissæ; et fit syllogismus in Celarent.

Ce *Nullum animal est lapis;*

la *Omnis homo est animal;*

rent. Ergo, *Nullus homo est lapis.*

Hujus syllogismi conclusio est simpliciter convertenda, et fit syllogismi reducendi conclusio.

Reductionis ostensivæ validitas sic ostenditur. Ex præmissis reducendi, per conversionem imperatam, necessariò colliguntur præmissæ reducti: atque ex iis, per figuram primam, conclusio reducti; quæ vel ipsa conclusio reducendi erit, ut in primo exemplo allato: vel per illativam conversionem fiet, ut in secundo.

Exemplum reductionis ad impossibile. Sit syllogismus reducendus in Baroko, ut

Ba *Omnis homo est animal;*

rok *Aliquod vivens non est animal;*

o. Ergo, *Aliquod vivens non est homo.*

Pro minore substituenda est contradictio conclusionis; et si exinde deducatur conclusio, fiet syllogismus in Barbara, ut

Bar *Omnis homo est animal :*

ba *Omne vivens est homo :*

ra. Ergo, *Omne vivens est animal.*

Hujus reductionis validitas sic ostenditur. Præmissæ reducendi, ex hypothesi, sunt veræ; ergo conclusio reducti (quæ alteri ex iis contradicit) est falsa; ergo quædam ex præmissis reducti est falsa, et hæc necessariò est contradictoria conclusionis reducendi; ergo illa conclusio est vera. Hoc est argumentum, quod appellatur ad absurdum: de quo vide infrà.

CHAP. V.

ARISTOTLE derives this doctrine of syllogisms from another principle, namely, from the rules *de omni* and *de nullo*; i. e. Whatsoever is affirmed universally about any universal term, is also affirmed about all things which are contained under that universal term:—and whatsoever is denied universally about any universal term, is also denied about all things which are contained under that universal term. Thus, whatsoever can be affirmed or denied about *every animal*, may also be affirmed or denied about *every man*; as is evident.

From these principles the necessity of the consequence immediately appears in the first figure. For, in affirmative modes, the major term is affirmed of the entire middle, and the minor term is contained under the middle; therefore the major term is to be affirmed of the minor: and in like manner in negative modes.¹

But in the other figures, although it follow that the ex-

termes agree with each other, from their agreement with one and the same third term, yet from their disposition in the premises it does not immediately appear, which of them is to be predicated of the other. On this account he calls the first figure *perfect*, and the others *imperfect*; and derives the certainty of the conclusions in the other figures, from the certainty of the conclusion in the first; by showing that by the force of the same premises the same conclusion may, by reduction, be collected in the first figure.²

Reduction of a syllogism is the change of an imperfect mode into a perfect. The syllogism whose mode is imperfect is called the *reducend*; and that whose mode is perfect, the *reduct*.

Reduction is either *ostensive* or *ad impossibile*. Ostensive reduction is when the very conclusion of the reducend is deduced in the first figure, or a conclusion that infers it. Reduction *ad impossibile* is when from one of the premises of the reducend, and the contradictory of its conclusion, we deduce in the first figure, a conclusion which contradicts the other premiss.³

The names of the modes point out the practice of both kinds of reduction. For 1. the initial letter is the same in the mode of the reducend and the reduct. Thus *Cesare* is reduced to *Celarent*; *Festino* to *Ferio*; *Baroko* to *Barbara*, &c. 2. The letter *S*, or *P*, denotes that the proposition, to which the preceding vowel is prefixed, must be converted—*S* simply—and *P* *per accidens*. *S*, therefore, always follows *E* or *I*: and *P* follows *A* in the premises, but *I* in the conclusion. Thus in reducing the mode *Festino*, the major is to be converted simply; and in reducing *Felapton*, the minor is to be converted *per accidens*. 3. *M*, wherever it occurs in the mode, denotes that the premises are to be transposed. Thus in reducing *Disamis*, the minor proposition of the reducend becomes the major of the reduct, and

v. v. 4. *K* denotes that the contradictory of the conclusion is to be substituted in place of the premiss, to which the preceding vowel is prefixed. Thus, in reducing Baroko, the contradictory of the conclusion is to be substituted in place of the minor proposition of the reducend.

Examples of ostensive reduction.

Let the reducend syllogism be in Cesare, as

Ce[̄] *No stone is an animal ;*
 a *Every man is an animal ;*
 re ∴ *No man is a stone.*

The major proposition is to be converted simply ; by which means we have the reduct in Celarent.

Ce *No animal is a stone ;*
 la *Every man is an animal ;*
 rent ∴ *No man is a stone.*

Let the reducend be in Camestres ; as

Cam *Every man is an animal ;*
 es *No stone is an animal ;*
 tres ∴ *No stone is a man.*

First, the minor is to be converted simply ; then the premisses are to be transposed : and we have a syllogism in Celarent.

Ce *No animal is a stone :*
 la *Every man is an animal :*
 rent ∴ *No man is a stone.*

The conclusion of this syllogism is to be simply converted, and we have the conclusion of the reducend.

The validity of ostensive reduction is thus shown: the premisses of the reduct are collected by necessary inference from the premisses of the reducend, by means of the *prescribed conversion*: and from them the conclusion of the

reduct is drawn by the first figure: which conclusion will either be the same with the conclusion of the reducend, as in the first example adduced, or will afford it by the inference of conversion, as in the second example.

Example of reduction *ad impossibile*.

Let the reducend be in Baroko; as,

Ba *Every man is an animal;*
 rok *Some living things are not animals;*
 o \therefore *Some living things are not men.*

The contradictory of the conclusion is to be substituted for the minor; and if we then draw a conclusion, the syllogism will be in Barbara; as

Bar *Every man is an animal:*
 ba *Every living thing is a man:*
 ra \therefore *Every living thing is an animal.*

The validity of this reduction is thus shown. The premises of the reducend by hypothesis are true: therefore the conclusion of the reduct, which contradicts one of them, is false; therefore there is some falsehood in the premises of the reduct; and it must necessarily be in the contradictory of the conclusion of the reducend. Therefore that conclusion is true. This is the argument that is called *ad absurdum*: of which hereafter.⁴

COMMENTARY.—CHAP. V.

IT is plain, that whatever can be universally affirmed of any universal term, may be affirmed of everything contained under that universal term: and, in like manner, that whatever can be universally denied of any universal term, may be denied of everything contained under that universal term. — Upon these two indubitable principles—(the former called the rule *de omni*, and the latter the rule *de nullo*)—Aristotle

erects the whole fabric of legitimate syllogistic reasoning.

In the conclusion of a syllogism, the major term is affirmed or denied of the minor. And, according to the above principles, this inference may be drawn with certainty from the premises, wherever the major term has been universally affirmed or denied of the middle term, in the major proposition; and the minor term (in a quantity equal to that which it has in the conclusion) has been said to be contained under the middle term, in the minor proposition; i. e. wherever the major proposition has been universal, and the major term its predicate; and the minor has been affirmative, and the minor term (in the same quantity which it has in the conclusion) its subject,—the subject of every affirmative proposition being said to be contained in its predicate. In other words, the conclusion necessarily follows from the premises in those modes of the first figure, which have an universal major, of the same quality with the conclusion; and an affirmative minor, of the same quantity with the conclusion.

Such modes are called *perfect* modes: because in them the *necessity of the consequence* immediately appears, from the rules *de omni* and *de nullo*: or, it immediately appears, from those rules, that the conclusion necessarily follows from the premises; so that, if the premises be true, the conclusion must also be true.

Observe then, that to constitute a syllogism *perfect*, it must not only be in the first figure, but its premises must be AA, or AI, or EA, or EI; and the conclusion must have the quality of the major proposition, and the quantity of the minor. It must have the quality of the major, because according to the rule *de omni*, from the affirmation of the major term about the middle, we must infer its affirmation about that which is contained in the middle; and according to the rule *de nullo* from the denial of it about the middle, we must infer its denial about that which is contained in the middle. It must have the quantity of the minor, because whatever quantity the minor term has in the minor proposition, it is so much of it that is there said to be contained in the middle; and it is therefore about so much of it, that we must infer the affirmation or negation of the major term in the conclusion. The only perfect modes, therefore, are the modes

in the first figure—AAA, AII, EAE, EIO. Even the modes AAI and EAO, which in this figure indeed are useless, are not properly perfect modes: the conclusions not being such as we are immediately warranted to infer from the premises, by the rules *de omni* and *de nullo*; but inferred from the immediate conclusions, by subalternation. It is only in the four modes of the first figure above-mentioned, that the necessity of the consequence *immediately* appears, from the rules *de omni* and *de nullo*.—You may take the following syllogisms as examples of the perfect modes.

1. *All rational beings are accountable for their actions.*

All men are rational beings.

Therefore, *All men are accountable for their actions.*

2. *No irrational being is accountable for his actions.*

All brutes are irrational beings.

Therefore, *No brute is accountable for his actions.*

3. *All rational beings are accountable for their actions.*

Some animals are rational beings.

Therefore, *Some animals are accountable for their actions.*

4. *No irrational being is accountable for his actions.*

Some animals are irrational beings.

Therefore, *Some animals are not accountable for their actions.*

In the other figures, those modes are considered legitimate, which can be *reduced* to some of these perfect modes. And it will appear upon examination, that all the modes, whose conclusiveness we before attempted to establish by the general and special rules, are capable of such reduction; and no other.

In *ostensive reduction* we form the premises of the *reduct* out of the premises of the *reducend*, by conversion or transposition, or both: and from these new premises we deduce, according to the rules *de omni* and *de nullo*, a conclusion, which is either the same with the conclusion of the *reducend*, or one that infers it by conversion.

In order, therefore, that an *imperfect mode* should be

capable of this reduction, its premises must be such, that one of the extremes should appear to be predicable of the middle term universally, and the other extreme to be contained in the middle term: and that when the former extreme is similarly predicated of the latter in the same quantity, we should have either the very conclusion of the imperfect mode, or its *convertend*. In any mode thus reducible, the changes, that are to be made in the premises of the *reducend*, may easily be determined, by recollecting that the object to be attained is—1. to have the middle term the subject of the major proposition, and predicate of the minor; and 2. to have an universal major and an affirmative minor.

Thus in the modes EAE, and EIO, of the second figure; by only converting the major proposition, the place of the middle term will be corrected in it; and we shall then have the major term universally denied of the middle; and the minor term (in the same quantity which it has in the conclusion) contained in the middle; so that by the rule *de nullo* we arrive at the conclusion of the *reducend*.

So, in the modes AAI, EAO, AII, EIO, of the third figure, the major proposition being universal and the minor affirmative, and the middle term being in its right place in the major proposition; the same object will be attained, by only converting the minor of the *reducend*.

But in AEE of the second figure, and IAI of the third, the premises must be transposed, in order to have, in the former an affirmative minor, and, in the latter, an universal major: and besides this, conversion must be employed, to bring the terms to their proper place—in the minor proposition of the former, (it becoming the major of the *reduct*), and in the major proposition of the latter. In the former, therefore, thus altered, the minor term will be universally denied of the middle, and the whole major will be contained in the middle; the conclusion from which, by the rule *de nullo*, is that the minor term is to be denied of the whole major; the converse of which gives us the conclusion of the *reducend*. In like manner, after making the changes above described in the premises of IAI in the third figure; they assert that the minor term is to be universally affirmed of the middle, and that some of the major term is contained in the middle: from which, by the rule *de omni*, we arrive at the conclusion, that the minor term is to be affirmed of some

of the major ; by converting which we get the conclusion of the reducend.

It is plain that, wherever we transpose the premises of the reducend, the extremes will hold a position in the conclusion of the reduct, contrary to that which they held in the conclusion of the reducend ; and, therefore, that the former conclusion will not be the same with the latter, but must be converted to arrive at it.

In the modes AAI, AEE, and IAI, of the fourth figure, no other change will be necessary than transposing the premises ; because this at once corrects the place of the middle term in both of them, and gives us an universal major and affirmative minor.

But in EAO and EIO, though the transposition of the premises would (as before) bring the terms into their proper position, yet it cannot be employed without giving us a negative minor in the former, and a particular major in the latter. The position of the terms, therefore, needing correction in both the premises, they must both be converted

Thus you may perceive, for instance, why EAE, in the fourth figure, cannot be reduced, and is therefore to be rejected as inconclusive. For, when we convert the premises, the major term indeed is universally denied of the middle, but only part of the minor is contained in the middle ; from which we can only infer that the major is to be denied of *part* of the minor.

But there are two modes, to which another kind of reduction has been applied, called *reductio ad impossibile* ; from an idea that they could not be reduced by *ostensive* reduction, viz. AOO in the second figure, and OAO in the third.

And here we prove the truth of the conclusion indirectly, by an *argumentum ad absurdum* (vid. chap. 10.) ; i. e. by proving that it cannot be false ; and this, by showing that a falsehood would follow from supposing it false, or (in other words) from supposing its contradictory true.

Thus, in AOO of the second figure, if in place of the particular negative minor I substitute the contradictory of the particular negative conclusion ; the middle term will be universally affirmed of the major in the major proposition, and in the new minor proposition it will be asserted, that the whole minor term is contained in the major : whence will follow the conclusion (by the rule *de omni*) that the middle

term is to be affirmed of the whole minor. This is the contradictory of the minor proposition of the reducend, in which the middle term is denied of part of the minor. Now the premises of the reducend being supposed true, the conclusion of the reduct, which contradicts one of them, is false: and following, by necessary inference, from the premises of the reduct, (it being a perfect mode in which the *necessitas consequentiæ* is immediately evident,) there must be a falsehood in the premises of the reduct. But the major proposition being the same with the major of the reducend, is confessedly true. The falsehood, therefore, must be in the minor of the reduct, which is the contradictory of the conclusion of the reducend. This conclusion, therefore, must be true.

In like manner, in reducing OAO of the third figure, if we substitute the contradictory of the particular negative conclusion for the particular negative major, in our new premises the major term will be universally affirmed of the minor, and the whole middle is said to be contained in the minor; whence it follows, by the rule *de omni*, that the major term is to be affirmed of the whole middle. From the manifest falsehood of this conclusion, we infer (as before) a falsehood in the assumed premiss from which it follows: and hence the truth of the conclusion of the reducend, which that premiss contradicts.

It is plain that, in these two cases, the reduct is in the mode AAA; and that in the former the major term of the reducend,—in the latter, the minor term,—is the middle term of the reduct.

All the other modes *might* be reduced in the same manner: for whatever follows by necessary inference from any premises, may be proved *indirectly* by showing that the denial of it would involve the contradiction of one of those premises: and in any legitimate syllogism of the second figure, if we substitute the contradictory of the conclusion for the minor, we shall have premises fitted for a perfect mode; or in any of the third figure, if we substitute it for the major. In this figure, if the premises be universal, the conclusion of our reduct will be, not the contradictory, but the contrary of the omitted major.—In the fourth figure, we shall arrive at a conclusion in our reduct, the converse of which will be *contradictory or contrary* of the omitted premiss.

But I would now observe, that this circuitous method of reduction is not necessary, even in these two modes, AOO of the second figure, and OAO of the third; that they may be reduced as well as any of the others, by *ostensive* reduction. To understand this, the learner has only to recollect what has been said (p. 49,) about the way of managing a negative proposition as an affirmative, and v. v.

Thus, the following syllogism, in the mode OAO, of the third figure,—

Some rational beings are not men ;

All rational beings are accountable ;

Therefore, *Some accountable beings are not men ;*

—by connecting the negative particle, in the major and conclusion, with the *res copulata*, will pass into the mode IAI: which will be reduced by transposing the premises, and converting the major. Thus:—

All rational beings are accountable ;

Some beings not-men are rational ;

Therefore, *Some beings not-men are accountable ;*

—by converting which conclusion, we arrive at the conclusion of the reducend, *Some accountable beings are not men.*

In like manner, if we proceed to reduce AOO, of the second figure, by this method, it will be first transformed into EIO: for the middle term being the predicate of both the premises, when we connect the negative particle with it, to transform the minor O into I, we must, in order to have the same middle term in the major proposition, transform it into E. Thus let the reducend be—

All accountable beings are rational :

Some animals are not rational :

Therefore, *Some animals are not accountable.*

When I transform the minor into an affirmative proposition, the middle term becomes *not-rational* or *irrational*. I must therefore transform the major into—*No accountable being is irrational*: by converting which, the premises of the reduct will be—

No irrational being is accountable :

Some animals are irrational.

Whence, by the rule *de nullo*, I get the conclusion, *Some animals are not accountable*; the same with the conclusion of the reducend.

I have thus shown, how all the 15 imperfect modes, which we before considered as legitimate, may be reduced to some of the 4 perfect modes; and are therefore conclusive.

Let it be again remarked, that the end we propose, in this reduction of them, is to establish the truth of their conclusions; about which we are at first doubtful; as there is no *vis consequentiæ* immediately apparent between them and the premises, from which they are deduced. So that, although the premises be admitted as true, yet as the conclusions do not *immediately appear* to follow from them by necessary inference, we may be supposed to question their truth. But in reduction we show, that from premises derived from the premises of the reducend, (either by transposing, or converting them, or both,) we may derive the same conclusion, or one that infers it by conversion, in a perfect mode; in which the *vis consequentiæ* is immediately apparent, from the rules *de omni* and *de nullo*. In this general view, I put reduction *ad impossibile* out of the account: as I have shown it to be quite unnecessary.

But it may be asked, how do we know that some others of the 64 varieties, in the three figures, are not capable of reduction, and ought not therefore to be admitted as conclusive. To this I reply, that if you try to reduce any of these, you will find yourself unable. But a more direct proof that they are not reducible I reserve for the Appendix; conceiving that most of the younger students may for a while omit it without loss.

[NOTES—PART III.—CHAP. V. :—

1. DUGALD STEWART, in his *Philosophy*, brings an objection against the dictum of Aristotle, which it may be worth while to notice briefly, for the sake of setting in a clearer light the real character and object of that principle. Its application being, as has been seen, to a regular and conclusive syllogism; he supposes it intended to prove and make evident the conclusiveness of such a syllogism, and remarks how unphilosophical it is to attempt giving a *demonstration of a demonstration*. And, certainly, the charge would be just if we could imagine the logician's object to be to increase the

certainly of a conclusion, which we are supposed to have already arrived at by the clearest possible mode of proof. But it is very strange that such an idea should ever have occurred to one who had even the slightest tincture of natural philosophy, for it might as well be imagined that a natural philosopher's or a chemist's design is to strengthen the testimony of our senses, by *a priori* reasoning, and to convince us that a stone will fall to the ground, and that gunpowder will explode when fired, because they show that according to their principles, these phenomena take place as they do. But their object is not to *prove* the existence of an individual phenomenon, which our eyes have witnessed, but to *account* for it; so the proof drawn from Aristotle's dictum, is not a distinct demonstration brought to confirm another demonstration, but is merely a generalized and abstract statement of all demonstrations whatever; and is, therefore, in fact, the very demonstration which (*mutatis mutandis*), accommodated to the various subject matters, is actually employed in each particular case. Dr. Campbell, in his Philosophy of Rhetoric, brings an objection against the dictum with some ingenuity, and not without an air of plausibility, to show that every syllogism must be futile and worthless, because the premises virtually assert the conclusion, little dreaming, of course, that his objections, however specious, lie against the *process of reasoning itself* universally, and will, therefore, apply to those very arguments which he is himself adducing.—WHATELEY.

2. To constitute a syllogism perfect, there are four requisites. The middle shall be subject of one premiss, that premiss shall be universal; the middle shall be predicate of the other premiss, and that premiss shall be affirmative. There may be a fifth condition, that the conclusion be not particular, when from the premises it may be universal.

In reducing ostensibly, the premises of the reducend are subjected to only two processes, conversion and transposition, and when O occurs as premiss, which is inadmissible.—THYNNE.

Aristotle's dictum may be stated as follows, in the form of a syllogism:

- 1st. Any, whatever predicated of a whole class.
- 2nd. Under which class something else is contained.
- 3rd. May be predicated of that which is so contained.—WHATELEY.

3. The following are the modes of the first figure, to which those of the second are reducible by reduction *ad impossibile*:

<i>Reducend.</i>	<i>Reduct.</i>
Cesàre	Ferio.
Camèstres	Darii.
Festino	Celarent.
Baròko	Barbara.

The following are the modes of the first figure, to which those of the third are reducible by reduction *ad impossibile*:

<i>Reducend.</i>	<i>Reduct.</i>
Dārapti	Celarent.
Fēlaptōn	Barbara.
Disamis	Celarent.
Dātisi	Ferio.
Bōkardo	Barbara.
Fērison	Darii.

The following are the modes of the first figure, to which those of the fourth are reducible by reduction *ad impossibile* :

<i>Reducend.</i>	<i>Reduct.</i>
Brāmāntip	Celarent.
Camēnes	Darii.
Dimaris	Celarent.
Fēsāpo or Fēsāpo	Barbara or Celarent.
Fērison or Fērison	Darii or Celarent.

QUESTIONS :—

On what principles did the predecessors of Aristotle found the doctrine of syllogism?—Whence did Aristotle derive it?—What do the rules of “*de omni*” and “*de nullo*” mean?—How do they differ?—Include the two in one?—How does the conclusion in the first figure appear *necessary* by the rules “*de omni*” and “*de nullo*”?—What is immediately perceivable in the other figures?—Why are the three last figures called imperfect?—What is reduction?—What appellations have perfect and imperfect modes?—What is *Reducend*?—What is the “*Reduct*”?—What is *Ostensive Reduction*?—What is *Reduction ad impossibile*?—What use is made of the *initial letters* of the imperfect modes?—What means the letters S, P, M, and K?—How do you show the validity of the reduction in both cases?—Of what general description of argument is reduction *ad impossibile* a species?—What does the conclusion of every simple Syllogism assert?]

CAPUT VI.

Hæc de syllogismis qui modum habent et figuram, quique Simples, Directi, &c. appellantur. Sunt verò et aliæ quædam species, quæ non rarò in disputationibus adhibentur. Quarum præcipuæ sunt quæ sequuntur.

Enthymema est syllogismus cujus una præmissarum retinetur.

Constat ergo ex duabus propositionibus quæ appellantur

Antecedens et Consequens. Antecedens est vel major vel minor propositio syllogismi; et consequens est semper conclusio. Utrum verò suppressa sit major an minor, (si sit simplex) hâc regulâ dignosci potest: si subjectum consequentis ponatur in antecedente, suppressa est major: si prædicatum, minor. Nam consequens est semper conclusio, et inde ejus subjectum est minor terminus; et prædicatum, major. Ex. gr.

Omnis homo est animal:

Ergo, *Omnis homo sentit.*

Et, *Omne animal sentit:*

Ergo, *Omnis homo sentit.*

In priori enthymemate deest major propositio; in posteriori, minor.

Si nec subjectum nec prædicatum consequentis ponatur in antecedente, suppressa est major; quæ potest esse vel hypothetica vel disjunctiva: nam quoniam quatuor sunt termini, fieri nequit syllogismus simplex, sed necesse est propositionem suppressam in se continere totam vim consequentiæ, quod semper efficit major hypothetica vel disjunctiva; ideoque in hujusmodi enthymemate propositio suppressa semper esse potest major hypothetica vel disjunctiva. Ex. gr.

Zeno non fallitur:

Ergo, *Aliquis sutor est rex.*

Hujus major suppressa est, quæ potest esse vel hypothetica, ut, *si Zeno non fallatur, aliquis sutor est rex:* vel disjunctiva, ut, *aut Zeno fallitur, aut aliquis sutor est rex.*

Antecedens et consequens aliquando communem habent terminum, et tamen ex regulis traditis patet propositionem suppressam non posse esse simplicem, ideoque esse vel hypotheticam vel disjunctivam. Ex. gr.

Nulla bestia est rationalis;

Ergo, *Omnis homo est rationalis.*

In hoc enthymemate antecedens est negativa, et consequens affirmativa, ergo (per reg. 5.) nequit esse pars syllogismi simplicis, sed propositio suppressa est vel hypothetica vel disjunctiva, ut *si nulla bestia sit rationalis, omnis homo est rationalis*.

CHAP. VI.

HITHERTO we have treated of syllogisms that have mode and figure, and that are called simple, direct, &c. But there are some other species, not unfrequently used in disputations; of which the principal are the following:

An *Enthymeme* is a syllogism, one of whose premises is suppressed. It consists therefore of two propositions, which are called the *antecedent* and *consequent*. The antecedent is either the major or the minor proposition of the syllogism; and the consequent is always its conclusion.¹

If the syllogism be a simple one, we may distinguish whether it be the major or the minor that is suppressed, by the following rule: if the subject of the consequent appear in the antecedent, the major is suppressed; but if the predicate, the minor. For the consequent being always the conclusion of the syllogism, its subject is the minor term, and its predicate the major. E. gr.

	<i>Every man is an animal;</i>	
Therefore,	<i>Every man has feeling.</i>	And
	<i>Every animal has feeling;</i>	
Therefore,	<i>Every man has feeling.</i>	

In the former enthymeme, the minor proposition is suppressed; in the latter, the minor.

If neither the subject nor predicate of the consequent appear in the antecedent, the major proposition is sup-

pressed; which may be either hypothetic or disjunctive. For, since there are four terms, the syllogism cannot be simple; but the suppressed proposition must necessarily contain in it the whole force of the consequent: which is always effected by an hypothetic or disjunctive major; and therefore, in such an enthymeme, the suppressed proposition may always be an hypothetic or disjunctive major. E. gr.

Zeno is not mistaken;

Therefore, *Some cobblers are kings.*

Here the major is suppressed; which may either be hypothetic, as—*If Zeno be not mistaken, some cobblers are kings;* or disjunctive, as—*Either Zeno is mistaken, or some cobblers are kings.*²

Sometimes the antecedent and consequent have a common term, and yet it is plain from the rules of syllogism that the suppressed position cannot be simple; and therefore that it is either hypothetic or disjunctive. E. gr.

No beast is rational;

Therefore, *Every man is rational.*

In this enthymeme the antecedent is negative and the consequent affirmative; therefore (by the 5th gen. rule) it cannot be part of a simple syllogism; but the suppressed proposition is either hypothetic or disjunctive: as—*If no beast be rational, every man is rational.*

COMMENTARY.—CHAP. VI.

WE now proceed to notice some of the other forms of argument, different from simple syllogisms. An *Enthymeme*, or syllogism, one of whose premises is suppressed, consists of two propositions, called the *antecedent* and *consequent*; of which the latter is the conclusion of the syllogism, and the former one of its premises.

If the syllogism, from which the enthymeme has been formed, be a simple syllogism, such as we have described; it is easy to perceive which of its premises the antecedent is, by observing which of the extremes occurs in it: and thence to ascertain which of the premises has been suppressed, and how the syllogism must be completed.

Thus, in the enthymeme—*Some men are destitute of reason*;—Therefore, *Some men are not accountable for their actions*; it is plain that the antecedent is the minor proposition of the syllogism, as the minor term appears in it; and that the premiss suppressed has been the major, viz. *No being destitute of reason is accountable for his actions*: and the syllogism is in EIO of the first figure. On the contrary, in the enthymeme—*All accountable beings are rational*—Therefore, *Some men are not accountable*: since the major term appears in the antecedent, it is plain that it is the major proposition, and that the minor has been suppressed—viz. *Some men are not rational*; and the syllogism is in AOO of the second figure.

This mode of reasoning by enthymeme is frequently employed, for the sake of brevity; and it is often needful to supply the omitted premiss, in order to detect a latent fallacy.

But it often happens that the syllogism, out of which the enthymeme has been formed, is not a *simple* syllogism, but *hypothetic* or *disjunctive*; of which kinds we shall treat in the two following chapters. And then it may be, that neither subject nor predicate of the consequent will appear in the antecedent, though they may both be simple propositions; and it may also happen, that either or both propositions of the enthymeme should be hypothetic or disjunctive. After you are acquainted with the matter of the following chapters, it will be easy to pursue this subject.

I would only add here, that the conclusion of this chapter, in the compendium, is erroneous: where it is intimated that, if the antecedent be negative, and the consequent affirmative, though they have a common term, the syllogism out of which the enthymeme is formed cannot be a simple one. The contrary will appear, from considering what I have said of the transformation of a negative proposition into an affirmative, and v. v. For instance, the following enthymeme—*Some men are not rational*—Therefore, *Some men are unaccountable*,

—may be considered as formed out of the simple syllogism—*All things not rational are unaccountable,—Some men are not-rational*—Therefore, *Some men, &c.*, or out of this—*No irrational being is accountable—Some men are irrational*—Therefore, *Some men are not accountable*. And the example given in the compendium—*No beast is rational*—Therefore, *Every man is rational*, is obviously synonymous with—*Every beast is irrational*—Therefore, *No man is irrational*; an enthymeme, however, which is inconclusive, on account of the argument *a particulari ad universale* which it involves. And accordingly there is no more any *vis consequentiæ* in the hypothetic premiss, which is supposed in the compendium to be suppressed; than there would be in the paralogism, out of which it might be supposed to be formed.

But it must be acknowledged, that although the antecedent and consequent may have a common term, and although neither part of the fifth general rule of syllogisms appear to be violated in them, yet there may be a fairly conclusive enthymeme, in which the middle term is of such a kind, that it is safer to consider it as formed out of an hypothetic syllogism, than out of any one simple syllogism. For instance, *All philosophers are fallible*—Therefore, *All men are fallible*. Here, if you were to supply—*All men are philosophers*, as the omitted minor; you would have a conclusive mode indeed, but an evidently false minor: and you would not have the real argument educed at all, which is couched in the enthymeme. You may therefore more safely conceive the omitted premiss to have been the hypothetic proposition, *If all philosophers be fallible, all men are fallible*. It must be observed, however, that in order to perceive either the *vis consequentiæ* in that hypothetic, or the force of the inference in any enthymeme, you must have a perception in your mind of that suppressed argument, from which the consequent follows. And hence the Greek name of *enthymeme*. You might be assisted in discovering that argument, by changing the form of expression in the antecedent and consequent. Thus the example I have given may be otherwise expressed—*Error is a mental failing to which all philosophers are subject*—Therefore, *It is that to which all men are subject*. Whence it appears, that the syllogism may be completed by the following major,—*Whatever is a mental*

failing, to which all philosophers are subject, is one to which all men are subject.

But, in fact, to treat the matter usefully, would require that it should be treated *de novo*. And this would be inconsistent with the design of the present commentary.

[NOTES—PART III.—CHAP. VI. :—

1. We have three varieties of enthymeme enumerated here; that whose parts have a common term, and do not violate the principles of simple syllogism; that whose parts have a common term, and violate the rules of simple syllogism; and that whose parts have no common term. The first kind of these may be subdivided into four sorts. 1st. Those in which the parts have a common subject, and, therefore, belong either to the first or second figure. 2nd. Those in which the parts have a common predicate, and which, therefore, belong to the first or third figure. 3rd. Those in which the subject of the antecedent is the predicate of the consequent, and which, therefore, belong to the second or fourth figure. 4th. Those in which the predicate of the antecedent is the subject of the consequent, and which belongs either to the third or fourth figure.

2. When one of the premises is suppressed (which, for brevity's sake, it usually is), the argument is called an Enthymeme. And it may be worth while to remark, that when the argument is in this state, the objections of an opponent are (or rather appear to be) of two kinds, *viz.*, either objections to the *assertion* itself, or objections to its force as an argument.

E. g.—In the above instances, an atheist may be conceived either denying that the world does exhibit marks of design, or denying that it *follows* from thence that it had an intelligent author. Now it is important to keep in mind that the only difference in the two cases is, that in the one the *expressed* premiss is denied; in the other, the *suppressed*; for the force, as an *argument*, of either premiss depends on the other.—WHALEY.

QUESTIONS :—

What is a simple or direct syllogism?—How many forms of reasoning are there besides a simple syllogism?—What is an enthymeme?—Why are these arguments pleasing to the person addressed?—How many parts does it consist of?—What is the rule to determine which premiss is suppressed?—If an antecedent and a consequent have no common term, which premiss is suppressed?—Is there any case in which, when the antecedent and consequent have a common term, the suppressed premiss is necessarily a compound proposition?—What will restrict an enthymeme to each of the four figures?]

CAPUT VII.

SYLLOGISMUS hypotheticus est cujus major, vel minor, vel utraque est hypothetica.

Si ex præmissis sola major sit hypothetica, conclusio erit absoluta: nam in minore absolutè ponitur pars quæ conditionem continet, vel ejus eversiva, ideoque conditio transferri nequit in conclusionem. Si vero minor sit hypothetica conclusio quoque erit hypothetica: quia nulla intervenit propositio, quæ conditionem tollat.

Si sola major sit hypothetica, duo sunt modi bene concludentes: prior, a positione antecedentis ad positionem consequentis: posterior, a remotione consequentis ad remotionem antecedentis.

Ponere, est propositionem assumere servatâ qualitate: i. e. affirmatum affirmare, vel negatum negare. *Removere*, est assumere propositionis contradictoriam: i. e. affirmatum negare, vel negatum affirmare, mutatâ quantitate.

Exemplum prioris modi.

Si nullus lapis sit animal, nullus lapis est homo:

Sed nullus lapis sit animal:

Ergo, Nullus lapis est homo.

Exemplum posterioris.

Si omne vivens sit animal, omne vivens sentit:

Sed aliquod vivens non sentit:

Ergo, Aliquod vivens non est animal.

Hi duo modi necessariò concludunt, quia ex veris nihil sequitur nisi verum. Nam in majore ponitur consequentem sequi ex antecedente; ergo, si antecedens sit vera, consequens erit vera, ut in modo priori; si consequens non sit vera, nec erit vera antecedens, a quâ sequitur, ut in modo posteriori.

Duo quoque sunt modi fallaces; a remotione antecedentis

ad remotionem consequentis ; et a positione consequentis ad positionem antecedentis.

Exemplum prioris.

Si omnis homo sit equus, omnis homo est animal :

Sed aliquis homo non est equus :

Ergo, Aliquis homo non est animal.

Exemplum posterioris.

Si omnis homo sit equus, omnis homo est animal :

Sed omnis homo est animal :

Ergo, Omnis homo est equus.

Hi modi non concludunt, quia a falso sequi potest verum ; ideoque ,quamvis falsa sit antecedens, non sequitur falsam esse consequentem, ut infertur in priori : et quamvis vera sit consequens, non sequitur veram esse antecedentem, ut in posteriori.

CHAP. VII.

AN *hypothetic* syllogism is that, whose major or minor is hypothetic, or both the major and minor. If the only hypothetic premiss be the major, the conclusion will be absolute : for, in the minor, the part that contains the condition, or what overturns it, is put absolutely : and therefore the condition cannot pass into the conclusion. But if the minor be hypothetic, the conclusion also will be hypothetic : because no proposition intervenes to remove the condition.¹

If the major alone be hypothetic, there are two legitimate ways of drawing the conclusion : 1. from the position of the antecedent to the position of the consequent—2. from the remotion of the consequent to the remotion of the antecedent. The *position* of a proposition is the assertion of it, retaining the quality, i. e. affirming what has been affirmed,

or denying what has been denied. The *remotion* of a proposition is the assertion of its contradictory ; i. e. denying what has been affirmed, or affirming what has been denied, with a change of quantity.

An example of the former method.

If no stone be an animal, no stone is a man ;

But no stone is an animal ;

∴ *No stone is a man.*

An example of the latter method.

If all living things be animals, all living things have feeling ;

But some living things have not feeling ;

∴ *Some living things are not animals.*

These two methods are necessarily conclusive, because from truth nothing follows but truth. For, in the major, it is asserted that the consequent follows from the antecedent : if therefore the antecedent be true, the consequent must be true, as in the former method ; and if the consequent be not true, the antecedent, from which it follows, cannot be true, as in the latter.²

There are also two fallacious ways ; viz. from the remotion of the antecedent to the remotion of the consequent ; and from the position of the consequent to the position of the antecedent.

An example of the former.

If all men be horses, all men are animals ;

But some men are not horses ;

∴ *Some men are not animals.*

An example of the latter.

If all men be horses, all men are animals ;

But all men are animals ;

∴ *All men are horses.*

These methods are not conclusive, because from falsehood truth may follow: and therefore, although the antecedent be false, it does not follow that the consequent is false, as is inferred in the former instance; and although the consequent be true, it does not follow that the antecedent is true, as is inferred in the latter instance.³

COMMENTARY.—CHAP. VII.

An *hypothetic* syllogism is said to be that, whose major or minor is hypothetic, or both major and minor. And it is observed that, if the minor be hypothetic, the conclusion must also be hypothetic. But in fact, when we apply the terms—*major* and *minor* propositions—to any but *simple* syllogisms, their meaning is quite indefinite. To treat the subject, therefore, with any accuracy, we must define an hypothetic syllogism to be that, either of whose premises is an hypothetic proposition.

Of such syllogisms there are three kinds: 1. when but one of the premises is hypothetic, and the conclusion absolute; 2. when but one of the premises is hypothetic, but the conclusion is also hypothetic; 3. when both the premises are hypothetic, in which case the conclusion must be so too.

The first kind is most frequently used in argument: and inasmuch as a true hypothetic proposition is of such a nature, that if the antecedent be true, the consequent must be true, and therefore if the consequent be false, the antecedent must be false; it appears that if the absolute premiss—(called, in the compendium, the *minor*)—assert the truth of the antecedent of the hypothetic, or the falsehood of its consequent, we may infer as our conclusion—in the former case, the truth of the consequent,—and, in the latter case, the falsehood of the antecedent. We employ the former mode of reasoning, if both the parts of the hypothetic proposition be true; the latter, if they be both false.

But since a true consequent may follow from a false antecedent, it is plain that there will be no *vis consequentiæ* in the syllogism, if the absolute premiss assert the truth of the *consequent*, or the falsehood of the antecedent: as we cannot

infer, from the former, the truth of the antecedent, nor from the latter, the falsehood of the consequent.

If the absolute premiss assert the falsehood of the consequent, we must also take care to make the conclusion the *contradictory*, not the *contrary*, of the antecedent. For we can only infer that the antecedent is false, but are not thence warranted to assert the truth of its contrary.

In the second kind of hypothetic syllogism, one of the premises indeed is absolute, but contains no assertion about either part of the hypothetic premiss. Whatever conclusion therefore may be drawn, the condition of that premiss must pass into it. Take the following instance. *If the definition given in the compendium for an universal term be adequate, every term that can be applied to several things is universal:—A singular term can be applied to several things: Therefore, If that definition be adequate, a singular term is universal.*

In the third kind of hypothetic syllogism, both the premises, and therefore the conclusion, are hypothetic. And in this case, the antecedent of one premiss is commonly the consequent of the other; and the conclusion consists of the former, and consequent of the latter. And this is a species of *Sorites*; of which more in the ninth chapter.

[NOTES—PART. III.—CHAP. VII.:—

1. THERE are thus three varieties of hypothetic syllogism—that whose chief premiss is hypothetic; that whose second, and that both of whose premises are hypothetic. This third variety is usually disposed in the order of *Sorites*—thus: If all men be animals, some animals have reason: If any animal have reason, they are subject to law. Therefore, if all men be animals, all men are subject to law.

2. In the premises in this, two things are premised. In the first, that the consequent of the hypothetic should follow from the antecedent, if the antecedent were true; and in the other, either that the antecedent is true, or that the consequent is false. And in the conclusion, it is deduced in the one case, that the consequent is true; and in the other, that the antecedent is false. Thus both parts of the hypothetic proposition occur again, either affirmed or denied—the one part in the minor, and the other in the conclusion.

—THYNNE.

3. In a hypothetic syllogism, whose major alone is hypothetic, the minor is the true or *absolute premiss*, for of it alone, there is made a positive assertion; the conclusion, though true, depends for that truth on the truth of the minor.

QUESTIONS:—

What is a hypothetic syllogism?—Which is the most usual form?—How is the truth or falsehood of the parts determined?—When will the conclusion be absolute?—How many conclusive modes are there of a hypothetic syllogism, whose major alone is hypothetic?—How obtained that the conclusion will be absolute?—Why is it if the minor be hypothetic, that the conclusion will be so too?—What means position?—What is remotion?—Why must remotion be made by contradiction?—Why is an argument from position of antecedent to position of consequent, or from remotion of consequent to remotion of antecedent, conclusive?—How many fallacious ways are there of drawing a conclusion in hypothetics?—Why are these inconclusive?]

CAPUT VIII.

SYLLOGISMUS disjunctivus est cujus major propositio est disjunctiva.

Si duæ sint partes in majore disjunctivâ, duo sunt modi deducendi conclusionem. 1°. A positione unius partis ad remotionem alterius. 2°. A remotione unius partis ad positionem alterius.

Exemplum prioris.

*Homo est vel rationalis vel irrationalis ;
Sed homo est rationalis ;
Ergo, Non est irrationalis.*

Posterioris.

*Homo est vel rationalis vel irrationalis ;
Sed homo non est irrationalis ;
Ergo, Est irrationalis.*

Si plures sint partes in majore ; omnibus præter unam remotis, quæ reliqua est concluditur. Ex. gr.

*Est vel ver, vel æstas, vel autumnus, vel hyems ;
Sed non est ver, nec æstas, nec autumnus ;
Ergo, Est hyems.*

Vel positâ unâ parte, reliquæ removentur, ut,

Sed est ver,

Ergo, Non est æstas, nec autumnus, nec hyems.

Syllogismus disjunctivus *ab enumeratione partium* est in quo ex remotione omnium partium, concluditur remotio totius. Hujus major est, vel esse potest hypothetica, cujus antecedens est simplex, consequens verò est propositio disjunctiva; minor propositio removet omnes partes consequentis, et conclusio removet totum. Ex. gr.

Si dolor sit formidandus, formidandus est vel longus vel gravis;

Sed nec formidandus est dolor longus nec gravis;

Ergo, Dolor non est formidandus.

Huc pertinet dilemma, quod ut plurimum duas habet partes, potest verò habere plures. *Dilemma* est argumentatio, in quâ a remotione partium concluditur remotio totius, et confirmatur remotio partium.

Dilemma constat ex uno syllogismo disjunctivo ab enumeratione partium, et tot simplicibus, quot sunt partes: nam simplicium ope confirmatur remotio partium. Ex. gr.

1°. *Si dolor sit formidandus, formidandus est vel longus vel gravis;*

Sed nec formidandus est dolor longus nec gravis;

Ergo, Dolor non est formidandus.

2°. *Dolor levis non est formidandus;*

Sed dolor longus est levis:

Ergo, Dolor longus non est formidandus.

3°. *Dolor brevis non est formidandus;*

Sed dolor gravis est brevis;

Ergo, Dolor gravis non est formidandus.

Dilemma fit inefficax, 1°. Si omnes partes simul non contineant totum: major enim disjunctivi erit falsa. 2°. Si

cujusvis partis remotio non sit certa ; deficit enim syllogismus simplex, cujus fuit hanc partem remove. 3°. Si possit retorqueri : nam argumentatio quæ contradictoria probat, nihil probat, ut in exemplo sequenti. Inter Protagoram et Eualthum convenisse dicitur, ut hunc ille dialecticam doceret ; idque hac lege, ut dimidium mercedis statim acciperet ; reliquum, cum discipulus causam vicisset. Primam exinde litem cum discipulo contestatus est magister, cum mercedis reliquum lege peteret ; apud judices vero sic agebat magister : *ego si vicero, solvendum est reliquum mercedis ex sententia judicum : sin minus, ex pacto ; utroque igitur modo solvendum est.* Respondit discipulus, *ego si vicero, nihil solvendum est ex sententia judicum ; sin minus, ex pacto ; utroque igitur modo nihil solvendum est.*

CHAP. VIII.

A *Disjunctive* syllogism is that whose major proposition is disjunctive. If there be but two parts in the disjunctive major, there are two different ways of drawing a conclusion : 1. from the position of one part to the remotion of the other ; 2. from the remotion of one part to the position of the other.

An example of the first method.

Man is either rational or irrational ;

But man is rational ;

∴ He is not irrational.

An example of the second :

Man is either rational or irrational ;

But man is not irrational ;

∴ He is rational.

If there be several parts in the major, from the remotion

of all the parts but one, we infer the position of the remaining one. E. gr.

*It is either spring, or summer, or autumn, or winter ;
But it is neither spring, nor summer, nor autumn ;
∴ It is winter.*

Or, from the position of one part, we infer the remotion of the rest : as—

*But it is spring ;
∴ It is not summer, or autumn, or winter.*

A syllogism *disjunctive from the enumeration of the parts* is that, in which from the remotion of all the parts the remotion of the whole is concluded. Its major is, or may be, an hypothetic proposition, whose antecedent is simple, but its consequent disjunctive. The minor proposition removes all the parts of the consequent ; and the conclusion removes the whole. E. gr.

*If pain be formidable, it must be so either when long
in its duration, or intense in its degree :
But it is not formidable either when long or intense ;
∴ Pain is not formidable.*

To this species of argument belongs a *dilemma* ; which most commonly has two parts, but may have more. A *dilemma* is an argument, in which from the remotion of the parts the remotion of the whole is concluded, and the remotion of the parts is confirmed. A dilemma consists of one syllogism disjunctive from the enumeration of the parts, and as many simple syllogisms as there are parts. E. gr.

1. *If pain be formidable, it must be so either when
long or intense ;
But it is not formidable either when long or intense ;
∴ Pain is not formidable.*

2. *Slight pain is not formidable ;
But pain, when long, is slight ;
∴ Pain, when long, is not formidable.*
3. *Short pain is not formidable ;
But pain, when intense, is short ;
∴ Pain when intense, is not formidable.¹*

A dilemma becomes invalid, 1. if all the parts together do not contain the whole ; for then the major of the disjunctive syllogism will be false ; 2. if the remotion of any part be not certain ; for then the simple syllogism fails, which was to confirm the remotion of any part ; 3. if it can be retorted ;² for an argument, which proves things contradictory, proves nothing, as in the following instance.—Protagoras and Eualthus are said to have made a bargain, that the former should teach the latter Logic, on condition of receiving one moiety of the price in hand, and the other moiety whenever the pupil should get the better in a disputation. The first contest then in which the scholar was engaged was with his master, who sued him for the remainder of the payment, and thus argued before the judges: *If I gain the cause, the remainder of the money must be paid me by the decree of the court ; but if I lose the cause, it must be paid me by our bargain ; in either case therefore it must be paid.* The scholar replied, *If I gain the cause, I am not to pay you by the decree of the court ; but if I lose the cause, I am not to pay you by our bargain ; in either case therefore I am not to pay you.³*

COMMENTARY.—CHAP. VIII.

A DISJUNCTIVE syllogism is that, one of whose premises is a disjunctive proposition. The observation made, in the beginning of the preceding chapter, will show the reason of

defining it thus, rather than as it is defined in the compendium.

The common ways of drawing a conclusion, in such a syllogism, are either—1. from the denial of all the parts but one, to the affirmation of that one; or 2. from the affirmation of one part, to the denial of all the rest. For instance: *The season is either spring, summer, autumn, or winter;—But it is neither spring, summer, nor winter;—Therefore, It is autumn :* Or, *But it is autumn ;—Therefore, It is neither spring, summer, nor winter.*

The whole force of such reasoning turns upon the supposition, that the disjunctive premiss has been formed according to the laws of division, mentioned in Chap. X. Part II. The conclusiveness in the former method appears from the *adequacy* of the division; in the latter method, from the *distinctness* of the parts. For, if there be a complete enumeration of *all* the seasons, in the four predicates of the disjunctive premiss, and the present season be not any of three of them; it must necessarily be the fourth. And if all the four predicates be so distinct, that no one of them can be affirmed of any other, and the present season be one of them, it cannot possibly be any of the other three.

Accordingly, if I omit *autumn* in the disjunctive premiss, and so make the division inadequate; though I should truly deny the present season to be either spring or summer, I could not truly infer that it is *winter*. And if I introduce *harvest*, so as to make two predicates—*autumn* and *harvest*—not distinct; though I should truly affirm the present season to be *autumn*, I could not truly infer that it is not any one of the remaining parts.

You may easily perceive that, in such a syllogism, if the disjunctive premiss, which is the basis of the reasoning and affirmative, have but two predicates, the other premiss and the conclusion must be simple propositions; but that, if it have more than two predicates, either the other premiss, or the conclusion, will also be disjunctive;—the other premiss, if we argue in the first of the two methods; the conclusion, if we argue in the second: and that in the first method of arguing, the conclusion is affirmative; in the second negative.

It is plain, also, that the force of this kind of syllogism, as well as of the common kind of *hypothetic syllogism*, is wholly

derived from the nature of the two kinds of propositions, from which they take their names.

There may be conceived, however, a disjunctive syllogism, all whose propositions shall be disjunctive : if, for instance, from the former division of all the seasons, and an assertion that the present season is neither *spring* nor *summer*, I infer that it is either *autumn* or *winter*.

The argument called—a syllogism *disjunctive ab enumeratione partium*—belongs more properly to the class of *hypotheticals*. In it one of the premises is an hypothetic proposition, whose consequent is disjunctive, and enumerates all the cases in which its antecedent can possibly be supposed true ; and from the denial of this disjunctive consequent in the other premiss, we infer the denial of the antecedent in the conclusion. Take the following argument against deists, as an example.

If the Scriptures be not a divine revelation, they must have been composed by men, who were either deceived themselves, or who intended to deceive others, and who must in this case have been either good men or bad men.

But none of these suppositions can be admitted.

Therefore, The Scriptures are a divine revelation.

If, in addition to this, the denial of each part of the consequent be confirmed by a simple syllogism, we have the argument called *dilemma* : if, for instance, I employ a simple syllogism, to prove—1. that the Scriptures cannot have been composed by men, *who were themselves deceived* ; arguing this from the nature of the facts which they relate : and another, to prove—2. that they cannot have been composed by *good* men, with the intention of deceiving others ; arguing this from the impiety and wickedness of such conduct : and another, to prove—3. that they cannot have been forged by *bad* men ; arguing this from the nature and tendency of the doctrines and precepts which the Scriptures contain.

It is plain, therefore, that a complete dilemma must consist of at least three syllogisms ; as there must be at least two parts in the disjunctive consequent : and that the argument will be invalid, if there be either an imperfect enumeration of the parts in the disjunctive consequent, or a weakness in any of the simple syllogisms.

The third case assigned in the compendium, in which a *dilemma* is said to be invalid,—namely, when it can be

retorted,—is rather a mark, by which we may conclude it to be fallacious; than any distinct circumstance of invalidity. And if the instance there given be examined, it will appear that one part of the argument, used by each disputant, must be inconclusive; if the other part be allowed.

Chrysippus' Sophism of the *Crocodile*, which Lucian laughs at in his *Vit. Auct.*, and the point of which seems to have escaped the editors, was probably a similar instance of a dilemma that might be retorted. A crocodile promised to restore a child which he had seized, if the father should tell him truly whether he would restore it or not. The father naturally apprehensive that, if he said the child would be restored, the crocodile would prove his answer false, by keeping it, replies, "You will not restore it:" and then proceeds to argue that, if he had told truth, he must have his child, according to the crocodile's promise; and if he had not told truth, the crocodile must restore his child, as it was false that he would not restore it. It is easy to see how the crocodile might retort this dilemma, and prove that in either case he must keep the child. If I mistake not, a similarly ludicrous instance may be found in *Don Quixote*.

[NOTES.—PART III.—CHAP. VIII.:—

1. THE confirmation of the remotion is the difference whereby dilemma is distinguished from a syllogism disjunctive from the enumeration of parts.—THYNNE.

2. The fallacy of the disciple's argument may easily appear, but the fallacy in both arguments is manifested by observing that each considers the decision of the Court valid only where it favours his own cause; and in the event of this decision being unfavourable, he considers the former engagement binding.

3. A dilemma differs in one and the same respect from both species of disjunctives, in necessarily consisting of more than one syllogism. A dilemma must consist, *at least*, of three syllogisms, for the disjunctive consequent of the hypothetic major must have at least two parts to confirm the remotion, of which you must employ two simple syllogisms, which, with the disjunctive *ad eum* part, make in all at least three.

QUESTIONS:—

What is a disjunctive syllogism?—How do you argue in such a syllogism?—Upon what depends the conclusiveness of this reason-

ing?—When the major has but two parts, how many ways are there of drawing a conclusion?—How, when the major has more than two parts?—What is a syllogism disjunctive *ab enumeratione partium*?—What is its major?—How do you argue in such a syllogism?—What is the effect of the minor, and what the conclusion?—What does a dilemma consist of?—What will render it invalid?—Shew why it is invalid in these cases?—How does a dilemma differ from a disjunctive *ab enumeratione partium*?—What is a copulative syllogism?]

CAPUT IX.

INDUCTIO est argumentatio, quâ ex positione omnium partium, concluditur positio totius; sive partes sint subjectivæ, sive integrantes.

Si omnes enumerentur partes, necessariò concludit inductio: sin minus, evertitur universalis conclusio, si exhiberi possit exemplum contrarium: in physicâ quidem si occurrat exemplum contrarium, restringitur tantùm conclusio, non rejicitur.

Exemplum est argumentatio, quâ ex positione unius singularis, infertur positio alterius similis; ut, *Bellum civile inter Marium et Syllam rempublicam laceravit; ergo, bellum inter Pompeium et Cæsarem lacerabit.* In hoc argumento ab uno singulari noto, tacitè infertur universale, positâ scil. omnium singularium similitudine; et exinde infertur aliud singulare ignotum: evertitur ostendendo singularia esse dissimilia.

Exemplum ab Aristotele appellatur inductio oratoria; ejus enim est usus præcipuus apud rhetores, qui argumenta sua, pro auditorum ratione, variant; et exemplum (utpote argumentum a sensibilibus desumptum) est ad captum vulgi.

Sorites est argumentatio constans multis propositionibus ita collocatis, ut prædicatum cujusque præcedentis sit subiectum sequentis, indeque prædicatum ultimum concludatur de subiecto primo; ut,

*Omnis homo est animal ;
Omne animal vivit ;
Omne vivens est corpus ;
Omne corpus est substantia ;*

Ergo, Omnis homo est substantia.

In sorite, unica propositio (scil. postrema) est conclusio, reliquæ omnes sunt præmissæ.

Ex definitione constat, terminum unumquemque bis occurrere in sorite, ideoque tot esse terminos diversos, quot sunt propositiones ; ex his duo sunt extremi, reliqui sunt medii ; et quot sunt medii, in tot syllogismos simplices resolvi potest sorites. Hi syllogismi possunt esse vel omnes in primâ figurâ, vel in diversis figuris : ex dictis ergo de primâ figurâ patet omnes in illâ fieri debere. Duæ primæ propositiones soritis sunt primi syllogismi præmissæ : hujus conclusio, et tertia propositio soritis, sunt secundi syllogismi præmissæ ; et sic deinceps, conclusio præcedentis syllogismi est semper altera præmissarum sequentis.

Sorites suprâ allata potest in tres syllogismos resolvi.

1°. *Omne animal vivit ;
Omnis homo est animal ;*

Ergo, Omnis homo vivit.

2°. *Omne vivens est corpus ;
Omnis homo vivit ;*

Ergo, Omnis homo est corpus.

3°. *Omne corpus est substantia ;
Omnis homo est corpus ;*

Ergo, Omnis homo est substantia.

Syllogismi in quos resolvitur sorites, in disputationibus ut plurimum separatim proponuntur ; rarè adhibetur sorites ; ejus ergo doctrinam nil opus est demonstrare. Hactenus dictis adjungere sufficiat, primam eam ex præmissis sortiti

posse esse particularem, et ultimam solam, negativam; omnes itaque medias esse universales affirmantes.

ADDENDUM.

De Sorite.

Ex præmissis Soritis, ultima sola potest esse negativa.

Nam si Sorites resolvatur in Syllogismos, ultimi conclusio eadem erit cum conclusione Soritis: et quoniam (per def.) prædicatum ultimum concluditur de subjecto primo, prædicatum illud erit in ultimo Syllogismo major terminus; ergo ultima Soritis præmissa erit ultimi Syllogismi major propositio; et quoniam major terminus est ejus prædicatum, medius erit subjectum: ergo Syllogismus erit in figurâ vel primâ vel tertiâ, et in utroque casu minor ejusdem Syllogismi erit affirmans; minor vero hujus Syllogismi est penultimi conclusio, ut patet: ergo penultimi Syllogismi conclusio erit affirmans, ideoque et omnes præmissæ ex quibus deducitur; hæc verò sunt omnes præmissæ Soritis præter ultimam.

Ex præmissis Soritis, prima sola potest esse particularis.

Nam termini intermedii inter primum subjectum et ultimum prædicatum sunt termini medii Syllogismorum in quos resolvi potest Sorites, ut patet; ergo quisque ex iis saltem semel debet esse universalis. Sed cum hi termini primum occurrunt in Sorite, sunt prædicata præmissarum omnium præter ultimam, et supra demonstratum fuit hasce præmissas esse affirmantes: ergo cum termini medii primum occurrunt, sunt omnes particulares; ergo cum iterum occurrunt, erunt omnes universales; sed cum iterum occurrunt, sunt subjecta præmissarum omnium præter primam, ergo præmissæ omnes præter primam erunt universales.

CHAP. IX.

INDUCTION is an argument, in which from the position of all the parts the position of the whole is concluded; whether the parts be subjective or integrant. If all the parts be enumerated, the induction is necessarily conclusive; otherwise, the universal conclusion is overturned, if there can be shown a contrary instance. In Physics, indeed, if a contrary instance occur, the conclusion is only restricted, but not overturned.

Example is an argument, in which from the position of one singular the position of another similar to it is inferred: as—*The civil war between Marius and Sylla rent the republic: therefore, The war between Pompey and Cæsar will rend it.* In this argument, from one known singular a universal conclusion is tacitly inferred, namely, from the supposed similitude of all the singulars; and thence we infer another unknown singular. It is overturned by showing that the singulars are dissimilar.

Example is called by Aristotle *oratorical induction*; for it is principally used by orators, who diversify their arguments according to their hearers; and *example* (as an argument borrowed from sensible objects) is suited to the populace.

A *Sorites* [so called from the Greek *σωρός*, a heap]—is an argument consisting of many propositions so disposed, that the predicate of each preceding is the subject of the following, till the last predicate is thence predicated of the first subject. E. gr.

Every man is an animal ;
Every animal has life ;
Every living thing is body ;
Every body is substance ;
 ∴ *Every man is substance.*

In a sorites, one proposition alone, namely, the last, is a conclusion: all the rest are premises. From the definition it is plain, that each term occurs twice in the sorites, and therefore that there are as many different terms as there are propositions. Two of these are the extremes; the rest are middle terms; and the sorites may be resolved into as many simple syllogisms as there are middle terms. These syllogisms may be either all in the first figure, or in different figures: it appears, therefore, from what we have said of the first figure, that they ought to be all made in it. The two first propositions of the sorites are the premises of the first syllogism; its conclusion and the third proposition of the sorites are the premises of the second syllogism; and so on, the conclusion of the preceding syllogism being always one of the premises of the following. Thus, the sorites above adduced may be resolved into these three syllogisms.

1. *Every animal has life;*
Every man is an animal;
∴ Every man has life.
2. *Every thing living is body;*
Every man has life;
∴ Every man is body.
3. *Every body is substance;*
Every man is body;
∴ Every man is substance.

The syllogisms, into which a sorites is resolved, are most commonly in disputations proposed separately; and the sorites is rarely employed. There is no occasion therefore to demonstrate the doctrine of it; and it may be sufficient to subjoin to what we have already said, that of the premises of a sorites the first alone can be particular, and the last alone negative. All the intermediate premises therefore are universal affirmatives.

The following proofs however of the two laws of sorites, are given in the Addenda.

1. Of the premises of a sorites, the last alone can be negative.

For, if the sorites be resolved into syllogisms, the conclusion of the last will be the same with the conclusion of the sorites: and since (by definition) the last predicate is concluded of the first subject, that predicate will be the major term in the last syllogism. Therefore the last premiss of the sorites will be the major proposition of the last syllogism; and since the major term is its predicate, the middle term will be its subject; and the syllogism therefore will be either in the first or in the third figure: and in either case the minor proposition of the same syllogism will be affirmative. But the minor of this syllogism is the conclusion of the penultimate syllogism, as is evident; which conclusion therefore will be affirmative, and consequently also all the premises from which it is derived: but these are all the premises of the sorites except the last.

2. Of the premises of a sorites, the first alone can be particular.

For the intermediate terms between the first subject and last predicate are the middle terms of the syllogisms, into which the sorites can be resolved, as is evident. Each of them therefore must be at least once universal. But when these terms first occur in the sorites, they are the predicates of all the premises except the last; and it has been just now proved that these premises are affirmative. Therefore when the middle terms first occur, they are all particular; and, therefore, when they occur the second time, they must be all universal. But when they occur the second time, they are the subjects of all the premises except the first; and therefore all the premises except the first must be universal.

COMMENTARY.—CHAP. IX.

IN the argument called *induction*, we infer something about a whole, from showing that it is true of each of the parts, into which that whole is divided. As, if I prove that *every government contains in it principles of change*: by showing that this is true of *each species* of government—*monarchy, aristocracy, democracy, &c.* Or, that *virtue tends to the well-being of society*; by showing that each of the actions and dispositions, into which virtue may be divided, has this influence.

To render induction strictly demonstrative, there must be a complete enumeration of all the parts. But this being often tedious, and sometimes impossible, as in natural philosophy, there may without it be an induction sufficiently copious to warrant a general conclusion; until the occurrence of a contrary instance shall oblige us to restrict or alter the conclusion.

Under this class of argument is reckoned *example*; in which from something true of one part, we infer that it is true of a similar part. And here the *similitude* of the parts supplies the want of a complete enumeration of them.

If you transpose the premises of any legitimate syllogism in the first figure, the form of argument, and order of the terms will be similar to that employed in a *Sorites*. The only difference is, that we do not call the argument a *Sorites*, unless it has more premises than two. In them, the predicate of the first premiss is the subject of the second; the predicate of the second, the subject of the third; and so on; till, in the conclusion, the predicate of the last premiss is predicated of the subject of the first.

All the premises but the first must be universal; and all the premises except the last must be affirmative. If the first premiss be particular, or the last premiss negative, the conclusion likewise must be particular or negative.

The force of the conclusion consists in this: that in it something is affirmed, or denied, of the subject of the first premiss, because, in the last premiss, the same thing has been affirmed or denied of the *whole* of some other term, in whose extension it appears from the other premises that the subject of the first is *contained*.

Thus, if I say that *some men* are contained in the extension of another term, the *whole* of which is contained in the extension of a third; whatever is true of the *whole* of this third, must be true also of *some men*. Here then is a tacit inference that *some men* are contained in the extension of the third term; which could not be drawn unless the two first premises were affirmative, and the second universal: nor could what is predicated of the third term, be inferred of that which is contained in it, unless it were predicated *universally* of that third; i. e. unless the third premiss also were universal.

And the same thing will hold good, if you suppose ever so many more premises. Unless the first premiss be affirmative, and all between the first and last universal affirmatives, you cannot infer that the subject of the first is contained in the subject of the last premiss. And unless the last premiss also be universal, you cannot infer that whatever is affirmed or denied of its subject, is to be affirmed or denied of the first subject. And thus the two rules of Sorites,—that no premiss but the first can be particular,—and that no premiss but the last can be negative,—appear sufficiently evident, without having recourse to the resolution of the Sorites into syllogisms. In the latter method of proof, it is assumed that a Sorites cannot be conclusive, unless it be resolvable into legitimate syllogisms.

Besides, the second proof given in the addenda is altogether invalid. In its present form, it only establishes that the *second* premiss must be universal. But, since the second and third are not premises of the *same* syllogism, nor the third and fourth, &c. it does not follow at all, from the predicates of the other premises being particular, that they must be universal in the subsequent premises. The proof, however, such as it is, may easily be completed, from the consideration that the subjects of all the premises after the second are necessarily particular in the *conclusions* of the preceding syllogisms, being either predicates of affirmative propositions, if the syllogisms be drawn in the first figure, or subjects of particular propositions, if they be drawn in the third or fourth figures.

If a Sorites be resolved into syllogisms, since it has as many different terms as propositions, and all these terms except the two extremes are middle terms; it is plain that the number of syllogisms will be less by two, than the number

of propositions. It is plain also, that if the two first premisses be transposed, and a conclusion drawn from them according to the rule *de omni*, there will be a syllogism in the first figure; whose conclusion, taken as the minor premiss of the second syllogism, and the third premiss of the Sorites as its major, will form the premises of the second syllogism: and so on. Thus all the syllogisms will be in the first figure: and all except the last will be in the modes AAA or AII: in the latter, if the first premiss of the Sorites be particular.

In thus resolving a Sorites into syllogisms, it appears that the first subject is the minor term of each syllogism. If the conclusion of the Sorites be an universal affirmative, the syllogisms into which it is resolved must be in the first figure. If the first premiss be particular, we may form the first syllogism in the fourth figure, by retaining the two first premisses in the order in which they lie. In its conclusion the first subject will be affirmed of part of the second predicate: and this term being the subject of the third premiss, the second syllogism must be in the third figure. If in forming this syllogism we have made the conclusion of the first our major, the third syllogism must also be in the third figure: but if we have made it the minor, the third syllogism may be either in the first or fourth figure.

Though I have accommodated my language in the last paragraph to the principles commonly current, I would observe (what easily appears from the conversion and transformation of propositions) that all the syllogisms into which a Sorites is resolved, may really be in *any* of the figures, if the conclusion be particular; and always in any of them except the third: though it be certainly absurd to form them in any figure but the first.

It would be easy to prosecute the subject further: and it is sometimes prosecuted further than it merits. I repeat it, that the real force of the argument in a Sorites is to be deduced, not from the resolution of it into Syllogisms, but from the consideration that something is universally affirmed or denied in the last premiss of a term, in which the preceding premises show that the first subject is contained: and therefore in the conclusion the same is justly affirmed or denied of the first subject, in the same quantity which it has in the first premiss.

[NOTES—PART III.—CHAP. IX. :—

1. MUCH has been said by some writers, of the superiority of the Inductive to the Syllogistic method of seeking truth, as if the two stood opposed to each other, and of the advantage of substituting the Organon of Bacon for that of Aristotle, because eminent logical writers have treated, or at least have appeared to treat, of Induction as a distinct kind of argument from Syllogism. This inaccuracy seems chiefly to have arisen from a vagueness in the use of the word Induction, which is sometimes employed to designate the process of *investigation* and of collecting facts; sometimes the deducing of an inference from those facts.—WHATELEY.

2. There are three species of induction: *Logical*, where no exception is allowable; *physical*, where there may be a very few exceptions; and *oratorical*, where the induction is not regularly proposed. Example is the origin of all true sciences. All our most general principles are originally manifested in singular instances.

3. A Sorites has as many *middle terms* as there are propositions, *less by two*, for there are exactly as many different terms as propositions; but two of these terms are extremes. It hence also appears that if a Sorites be resolved into syllogisms, those syllogisms will be two less than the propositions of the sorites, since there will be as many syllogisms as there are middle terms. However, the number of Syllogisms may be better determined thus: If *but one* proposition of the sorites were employed in each syllogism, there would be as many syllogisms as propositions; but in the first and last syllogisms, there are, respectively, two propositions of the sorites used, and for each of the intervening syllogisms, but one proposition.

QUESTIONS:—

What is induction?—When is it necessarily conclusive?—How may it be overturned?—How many species of induction are there?—Does a contrary instance always overturn the conclusion?—How many logical arguments are included in example?—What logical argument is violated?—Why is example called oratorical induction?—What is a sorites?—Exemplify this mode of argument?—What are the premises of a sorites?—How does it appear that every term occurs twice?—How many different terms in it?—How many extremes has a sorites?—What are the two grand laws of sorites?—Prove these laws by the rules of “*de omni*” and “*de nullo*”?—Into how many syllogisms may a sorites be resolved?—In what figures may these syllogisms be?—What term is middle of the first figure?—How do you form premises after the first syllogism?—If the two first premises of the sorites be transposed, in what figure will the first syllogism be?—Why is it unnecessary to enter more fully into the nature of the sorites?]

CAPUT X.

METHODUS Socratica disputandi ab Aristotelicâ differt in eo, quod in Aristotelicâ, idem proponit præmissis et conclusionem deducit; at in Socraticâ, disputans adversarium suum interrogat, et acceptis ad singulis quæstiones responsis, ex iis, tanquam ex præmissis, ipse conclusionem deducit. In hac itaque methodo, præmissæ negari nequeunt, quia sunt ab ipso adversario præconcessæ; et si rectè deducatur conclusio, ulteriori disputationi non est locus.

Hac methodo sæpe usus est Socrates ad cognitionem communicandum; sæpe etiam ad falsas aliorum opiniones evertendas, nempe ab iis deducendo conclusionem manifeste falsam, nam falsitas in conclusione legitimè deductâ, infert falsitatem in præmissis; et hoc fecit Socrates, ut, erroribus amotis, amici sui faciliùs veritatem amplecterentur.

Hujusmodi argumentum vix differt ab eo quod appellatur *argumentum ad hominem*, et semper sufficit ad adversarii opinionem evertendam, ut ex dictis patet; sed non semper ad nostram confirmandam, quia utræque possunt esse falsæ. Utrumque verò efficit (et adversarium evertit, et nostram opinionem confirmat,) species quædam ejus, scil. *argumentum deducens ad absurdum* vel incommodum;¹ quod definitur, argumentum quo a contradictione quæstionis quam volumus probare, et aliâ propositione manifesto verâ, colligimus aliquid manifestò falsum.²

Hujus argumenti vis pendet ex hisce principiis, viz. ex veris non sequitur falsa conclusio: et duæ contradictoriæ non possunt esse simul falsæ. Nam quoniam falsa est conclusio, falsa est quædam ex præmissis; sed ponitur unam esse manifestò veram, reliqua ergo (scil. contradictio quæstionis) est falsa; et inde quæstio ipsa est vera.

Hoc argumentum demonstrat solummodo, rem ita se habere; non verò ostendit, quare ita se habere debet, quod ad perfectam scientiam requiritur. Non ergo adhibendum est nisi

ex necessitate; ut in demonstrandis negativis, et aliis quibusdam propositionibus, quæ aliusmodi demonstrationem vix admittunt.

CHAP. X.

THE Socratic method of disputation differs from the Aristotelic in this, that in the latter the same person lays down the premises and draws the conclusion; but in the Socratic, the person who argues questions his opponent, and receiving replies to each of his questions, draws the conclusion from these replies, as premises. In this method therefore the premises cannot be denied, because they are previously granted by the opponent himself; and if the conclusion be rightly deduced, there is no room for further disputation.

Socrates often made use of this method for communicating knowledge; often also for refuting the false opinions of others, namely, by deducing from them a conclusion manifestly false; for a falsehood in the conclusion, if it be legitimately drawn, infers a falsehood in the premises. And Socrates practised this, that his friends, on the removal of their errors, might be more easily led to embrace the truth.

Such an argument scarcely differs from that which is called *argumentum ad hominem*; and is always sufficient (as is evident from what has been said) for overturning the opinion of the adversary, but not always for confirming our own; because both opinions may be false. But there is a species of it that does both (i. e. both overturns the adversary's opinion and confirms our own,)—namely, the argument leading *ad absurdum* or *incommodum*; which is defined to be an argument, in which, from the contradictory of the question that we wish to prove, and another proposition manifestly true, we deduce something manifestly false.

The force of this argument depends on these principles, viz. from true premises a false conclusion does not follow; and two contradictories cannot be at once false. For since the conclusion is false, there is some falsehood in the premises: but one of them is supposed to be manifestly true: therefore the other (namely the contradictory of the question) is the false one; and therefore the question itself is true.

This argument only demonstrates that the thing is so; but does not show why it must be so, which is requisite to perfect knowledge. It is not therefore to be employed but of necessity, as in demonstrating negative propositions, and some others, which scarcely admit another mode of proof.

COMMENTARY.—CHAP. X.

WE have described the Aristotelic method of reasoning; and now proceed to say a few words on the method used by Socrates, and which derives its name from that extraordinary man.

Socrates, in reasoning with those whose judgments he wished to inform or rectify, assumed the appearance rather of an inquirer, than of a disputant. He insensibly led those whom he conversed with, to draw themselves the conclusions he desired, by a series of well adapted interrogatories, rather than imposed his conclusions on them, by the direct force of any arguments of his own. He rather won their conviction by gradual and unobserved approaches, in which they followed him as a friend, than forced their assent, by the weight of overbearing proofs, as an assailant. He rather helped them to inform and rectify their own judgments, than appeared in the magisterial office of dictating truth, or refuting falsehood.

He found them ignorant of some important truth; and instead of professing to instruct them, he sought to learn their sentiments upon some other truth, with which he knew they were acquainted, and which he knew was connected *with the one he wanted to lead them to*. By familiar inter-

rogatories he conducted them, step by step, through the intermediate principles; till they were at length surprised with the perception of what they had never observed before. He found them under the influence of some dangerous error; and instead of professing to correct them, he led them on, by successive questions, to discern an absurdity, in which they unexpectedly found themselves landed by their own principles. And thus he avoided all that resistance to conviction, which often renders the most conclusive demonstration ineffectual to persuade.

This method is somewhat like the argument called *ad hominem*; in which we take the principles of the adversary for our premises; and from them either infer some truth connected with them, or some falsehood, which argues his principles to be false. In the former case the argument must be conclusive with the man, from whose own principles the inference is drawn; as he acknowledges the premises: but others need to examine them, before they admit the conclusion. In the latter case, the argument is near akin to that called *ad absurdum*; in which we prove the truth of the proposition we want to establish, by showing that an absurdity will follow from supposing it to be false.

Here we take, as our premises, the contradictory of the proposition that we wish to prove, and another confessedly true; from which we draw a conclusion manifestly false. We have seen an instance of the application of this species of argument, in reduction *ad impossibile*: where, wanting to establish the conclusion of the reducend, we assume its contradictory and one of the premises of the reducend, (both of which are supposed true;) and from those premises deduce, in a perfect mode, a conclusion, which is manifestly false, as contradicting the other premiss of the reducend.

It is plain that, in such an argument, we must assume the *contradictory* of the question, not its *contrary*: because from the falsehood of the latter, we could not infer the truth of the question itself.

This indirect mode of proof, it is observed, is not to be employed, except in cases of necessity; as it only proves that a thing is so, without showing *why* it is so. Perhaps, however, it might be questioned, whether its inferiority really consist in this: since, in the most direct demonstration, we can establish our conclusion only by showing that the denial of it

would involve the denial of some principle confessedly true. But to pursue this inquiry would be foreign from our present subject.

[NOTES—PART III.—CHAP. X. :—

1. THE *argumentum ad absurdum* differs from reduction *ad impossibile*, since in the latter you are required to have as your premises a given proposition, with the contradictory of the question; in the former your premises are any true proposition, with the contradictory of the question; and further, in reduction *ad impossibile*, your conclusion is drawn in the first figure: in *argumentum ad absurdum* in any figure.

2. The premises of an *argumentum ad absurdum* are affirmative: they admit the opinions of our opponent; for as he denies the question, he must admit its contradictory; and the other premiss is a truth acceded to by all, and therefore is granted by him.

QUESTIONS :—

How does the Socratic method differ from the Aristotelic?—What advantages has the Socratic method?—How does the Socratic method agree with the *argumentum ad hominem*?—What motive had Socrates for adopting this method?—In what is it defective?—What species of it supplies the defect?—What do you mean by an *argumentum ad absurdum*?—On what principles does the force of this argument depend?—How is its validity established?—What objection is there to it?—When fairly employed?]

CAPUT XI.

SOPHISTÆ nomen initio erat honestum; et omnibus in arte quâvis vel scientiâ peritis, sed imprimis philosophis, tribuebatur: postea verò ad eos transibat qui non indagandæ veritatis studio, sed quæstûs, victoriæ, vel litis gratiâ, disputabant; et syllogismi fallaces, quibus utebantur, sophismata erant nominata.

Sophismatum doctrina inter Artis Logicæ partes necessarias habetur; non quò alios decipere possimus, sed ne decipiamur ipsi: nec huic rei satis cavent præcepta de syllogismo vero; horum quidem ope everti potest *paralogismus*, (i. e. syllogismus qui in formâ suâ apertè peccat;) non verò

statim everti potest sophisma, quia similitudinem syllogismi veri ementitur; et hæc similitudo est priùs detrahenda, quàm per regulas syllogismorum possit everti.

Sophisma est syllogismus, qui sub specie formæ legitimæ, fallit.

Plerique, Aristotelem secuti, sophismata ad tredecim classes reducunt: quarum sex, vitio quodam in dictione; septem, vitio quodam extra dictionem laborant.

Sophismatum in dictione sex classes sunt, Homonymiæ, Amphiboliæ, Compositionis, Divisionis, Accentûs seu Prosodiæ, et Figuræ dictionis.

1. Sophisma Homonymiæ fit cum aliquis terminus syllogismi sit æquivocus, ut, *Canis latrat; canis est sidus: ergo, sidus latrat.*

2. Sophisma Amphiboliæ fit cum sententia vel propositio quædam sit ancipitis structuræ; ex. gr. *Quod tangitur a Socrate, illud sentit: sed arbor tangitur a Socrate: ergo, arbor sentit.*

Solvitur utrumque ostendendo, propter ambiguitatem, esse quatuor terminos.

3. Sophisma Compositionis fit assumendo ea esse vera conjunctim, quæ vera sunt tantùm divisim; ut, *Duo et tria sunt par et impar: quinque sunt duo et tria; ergo, quinque sunt par et impar.*

4. Sophisma Divisionis fit assumendo ea esse vera divisim, quæ vera sunt tantùm conjunctim; ut, *Quinque sunt unus numerus: duo et tria sunt quinque; ergo, duo et tria sunt unus numerus.*

Solvitur utrumque ostendendo quatuor esse terminos, ob diversitatem sensûs conjuncti et sensûs divisi.

5. Sophisma Accentûs seu Prosodiæ fit cum idem prædicetur diversis terminis, si fortè eodem modo scribantur, vel pronuncientur; ut, *Equus est quadrupes: Aristides fuit æquus; ergo, Aristides fuit quadrupes.*

6. Sophisma Figuræ dictionis fit cum idem prædicetur de vocabulis, quia similem habent terminationem: ut, *Verberare est actio*; ergo, *et vapulare*.

Sophismatum extra dictionem septem sunt classes; Accidentis, A dicto secundum quid ad dictum simpliciter, aut vice versâ, Ignorationis Elenchi, Non causæ pro causâ, Fallacis consequentis, Petitionis principii, et Plurium interrogationum.

1. Sophisma accidentis fit cum quicquid rei convenit, concluditur accidenti convenire, vel conversim; ut, *Animal est trisyllabum*: homo est animal; ergo, *homo est trisyllabus*. Solvitur distinguendo inter rem et accidens.

2. Sophisma a dicto secundum quid ad dictum simpliciter, aut vice versâ, fit cum concluditur subjecto absolutè convenire, quod ei convenit in quodam tantùm respectu, aut, vice versâ; ut, *Homo quoad animam est immortalis*; ergo, *homo est immortalis*; vel *homo est mortalis*; ergo, *homo quoad animam est mortalis*. Solvitur distinguendo inter terminum absolutè et determinatè sumptum.

3. Ignoratio Elenchi. Elenchus est confutatio opinionis adversarii. Sophisma ignorationis Elenchi fit cum aliquid probatur, quod opinioni adversarii non contradicit: ut si quis probare tentaret *hominem non esse liberum*, probando *hominem esse legi subjectum*. Solvitur ostendendo propositiones posse simul esse veras.

4. Sophisma non causæ pro causâ fit cum causa a verâ diversa, assignatur; ut, *Bellum erit, quia fulsit cometa*. Solvitur ostendendo causam assignatam, non esse causam; vel potius veram assignando.

5. Sophisma fallacis consequentis fit cum ex propositione deducitur conclusio quæ ex eâ non sequitur: hæc fallacia ut plurimum locum habet in enthymemate; nam suppressa est altera præmissarum, ne statim pateat, regulas esse violatas; ex. gr. *Crispus est blandus*; ergo, *est adulator*. Suppressa

est vel hæc propositio, (*omnis adulator est blandus*,) et peccatur contra primam regulam secundæ figuræ; vel ejus simpliciter conversa, (*omnis blandus est adulator*) et peccatur contra leges conversionis. Solvitur afferendo regulam contra quam peccatur.

6. Sophisma petitionis principii fit cum una ex præmissis ipsi quæstioni æquipollet; ut, *Nunquam fuit tempus, quo mundus non existeret, nec erit tempus quo non existet*; ergo, *mundus est æternus*. Solvitur ostendendo æquipollentiam quæstionis et præmissæ, et inde negando præmissam.

7. Sophisma plurium interrogationum fit cum simul proponuntur plures quæstiones, quæ neque simul affirmari, nec simul negari possunt; ex. gr. *Suntne mel et fel dulcia?* Evitantur insidiæ, ad singulas quæstionis seorsum respondendo.

CHAP. XI.

THE name of *Sophist* was originally a name of honour, and given to all who were skilled in any art or science, but especially to the philosophers. Afterwards however it passed to those, who disputed not for the sake of searching after truth, but for gain, victory, or wrangling; and the fallacious syllogisms which they employed were called *sophisms*.

The doctrine of sophisms is reckoned among the necessary parts of logic, not that we may be able to deceive others, but that we may not be deceived ourselves. Nor do the precepts concerning true syllogisms sufficiently guard against this. By the help of them indeed a *paralogism* may be overturned, i. e. a syllogism which is openly erroneous in its form; but not immediately a sophism, because it assumes the semblance of a true syllogism; and this semblance must be stripped off, before it can be overturned by the rules of syllogism.

A *sophism* is a syllogism, which under the appearance of legitimate form is fallacious. Most, following Aristotle, reduce sophisms to thirteen classes; six labour under a viciousness in the form of expression, and seven under some viciousness distinct from the form of expression.

The six classes of sophisms in the form of expression are—sophisms of *homonymia* [or quibble,] of *amphibolia* [or ambiguity,] of *composition*, of *division*, of *accent* or *prosody*, and of *figure of diction*.

1. A sophism of *homonymia* is when any term of the syllogism is equivocal: as—*The dog barks—The Dog is a star—∴ A star barks.*¹

2. A sophism of *amphibolia* is when any sentence or proposition is of ambiguous structure. E. gr. *The things they hold, all feel—But they hold trees—∴ Trees feel.*—Both sophisms are refuted by showing that, on account of the ambiguity, there are four terms.

3. A sophism of *composition* is when we assume things to be true jointly, that are only true separately: as—*Two and three are even and odd—But two and three are five—∴ Five is even and odd.*

4. A sophism of *division* is when we assume things to be true separately, which are only true jointly: as—*Five is one number—But two and three are five—∴ Two and three are one number.*

Both sophisms are refuted by showing that there are four terms, on account of the diversity of the meaning, when taken jointly and taken separately.²

5. A sophism of *accent* or *prosody* is when the same thing is predicated of different terms, if they be only written or pronounced the same way: as—*Equus est quadrupes—Aristides fuit quadrupes.* [If any curious English reader should be dissatisfied at finding this sophism shut out from his comprehension by the veil of a learned language, he may

be assured that there is nothing behind the veil, but a most contemptible *pun.*]

6. A sophism of *figure of diction* is when the same thing is predicated of words because they have a similar termination: as, *The Latin verb verberare denotes action*: therefore also the verb *vapulare*.

There are seven classes of sophisms labouring under a viciousness distinct from the expression: viz. *accidentis*, a *dicto secundum quid ad dictum simpliciter*, or *vice versâ*, *ignorationis Elenchi*, *non causæ pro causâ*, *fallacis consequentis*, *petitionis principii*, and *plurium interrogationum*.³

1. A sophism *accidentis* (or of *accident*) is when we infer that whatever agrees with a thing agrees with its accident, or v. v. as—*Animal is a word of three syllables—Man is an animal—∴ Man is a word of three syllables*. It is refuted by distinguishing between the thing and its accident.

2. A sophism *a dicto secundum quid ad dictum simpliciter*, or v. v. (i. e. from what is said in a certain respect to what is said simply) is when we infer that what agrees with the subject only in a certain respect agrees with it absolutely; or, v. v. as—*Man is immortal as to his soul—∴ Man is immortal*. Or, *Man is Mortal—∴ Man is mortal as to his soul*,—is refuted by distinguishing between the term taken absolutely and in a limited sense.

3. By *Elenchus* we mean the confutation of the adversary's opinion. A sophism *ignorationis elenchi* is when something is proved, which does not contradict the opinion of the adversary: as if one should try to prove that *man is not free*, by proving that *man is subject to law*.—It is refuted by showing that both propositions may at once be true.

4. A sophism *non causæ pro causâ* is when a cause different from the true is assigned: as—*There will be war, because a comet has appeared*.—It is refuted by showing that the assigned cause is not the real one; or rather by assigning the true cause.

5. A sophism *fallacis consequentis* (i. e. of a fallacious consequence) is when there is deduced from a proposition a conclusion, which does not follow from it. This fallacy appears most commonly in the form of an enthymeme; for one of the premises is suppressed, that it may not be immediately evident that the rules are violated. E. gr. *Crispus is courteous—∴ He is a flatterer.* The suppressed proposition is either this—*Every flatterer is courteous*, and then the first rule of the second figure is violated; or its simple converse—*Every courteous person is a flatterer*, and then the laws of conversion are violated.—It is refuted by adducing the rule which is transgressed.

6. A sophism *petitionis principii* (i. e. of begging the question) is when one of the premises is equivalent with the question itself (i. e. with the thing to be proved:) as—*There never was a time when the world did not exist, nor will be a time when it will not exist—∴ The world is eternal.*—It is refuted by showing that the premiss is equivalent with the question, and therefore denying the premiss.

7. A sophism *plurium interrogationum* (i. e. of several questions) is when there are at once proposed several questions, which cannot at once be answered either in the affirmative or negative. E. gr. *Are honey and gall sweet?*—The trick is evaded by answering separately to each question.

In attempting to translate this chapter, I have had two consolations; one, that I am near the end of the work: the other, that I can sink no lower in literary employment. I have determined to pass over the subject of this chapter, without attempting any comment on it; the classification of Sophisms is so bad, and the illustrations of the different species so puerile.

Yet few treatises, perhaps, would more usefully promote *the art of reasoning*, than one in which the different forms of

sophistical argument should be illustrated, by real examples from the works of eminent popular writers; and their fallaciousness exposed.

I the more willingly decline the task, from an expectation that a work of this subject will yet see the light—composed by one whose memory must long live in that University, which his talents and his learning adorned.

I shall only observe to the young student, that, of the different species of sophisms, there are none against which he needs more to be on his guard, than the two called—*ignoratio elenchi* and *petitio principii*. In the former, something is inferred as disproving a proposition, which it does not really contradict. In the latter, one of the premises, assumed as true, is equivalent in meaning with the conclusion, which is inferred; or equally questionable with it. All sophisms may perhaps be reduced to the head—*fallacis consequentis*.

[NOTES—PART III.—CHAP. XI.:—

1. WHEN an argument is brought into the form of a regular syllogism, the contrast between these two senses will usually appear very striking, from the two premises being placed together; and hence the scorn with which many have treated the fallacy of equivocation, deriving their only notion of it from the exposure of it in logical treatises; whereas in practise it is very common for the two premises to be placed very far apart, and discussed in different parts of the discourse. A very long discussion is one of the most effectual veils of fallacy.—WHATELEY.

2. By a fallacy is commonly understood, “any unsound mode of arguing, which appears to demand our conviction, and to be decisive of the question in hand, when in fairness it is not.”—WHATELEY.

3. The rules of logic enable us to develop the principles on which all reasoning is conducted, whatever be the subject matter of it, and to ascertain the validity or fallaciousness of any apparent argument, as far as the *form of expression is concerned*, that being alone the proper province of Logic; but it is evident that we may nevertheless remain liable to be perplexed or deceived in argument by the assumption of *false or doubtful premises*, or by the employment of *indistinct or ambiguous terms*.—WHATELEY.

QUESTIONS:—

To whom was the name of a Sophist originally applied?—What is the use of the doctrine of sophisms?—What is a sophism?—To how many classes has Aristotle reduced them?—How are these

classes divided?—What are the names of sophisms “in the form of expression?”—What kind of sophisms are *homonymia* and *amphibolia*?—Give an example of these?—How are these sophisms refuted?—What mean the sophisms of composition and division?—Exemplify these?—How are these sophisms refuted?—What kind is the sophisms of *accent* or *prosody*?—What a figure of *diction*?—How are these refuted?—What are the classes of sophisms that labour under a viciousness distinct from the form of expression?—What is a sophism of accident?—How is it refuted?—What is a sophism in a *dicto secundum quid ad dictum simpliciter*?—How is it refuted?—What is *Elenchus*?—What is *ignorationis elenchi*?—How is it refuted?—Explain the nature of *non causæ pro causa*?—How guard against this sophism?—What is a sophism *fallacis consequentis*?—What form is usually given to it?—What means the sophism *petitio principii*?—How refuted?—What means the sophism *plurium interrogationum*?—How may this be refuted?]

CAPUT XII.

HACTENUS traditis, subjungi solent quædam de methodo. *Methodus* est ars bene disponendi seriem cogitationum de eodem subjecto.

In omni methodo procedendum est a notioribus ad minus nota: et inde, prout res compositæ vel partes componentes sunt notiores, duæ sunt species methodi, *Analytica* et *Synthetica*. *Analytica* est quæ progreditur a compositis ad partes componentes. *Synthetica*, quæ progreditur a partibus componentibus ad composita.

Analyticæ annumerantur methodi, quæ progrediuntur ab effectu ad causam, a fine ad media, etc. *Syntheticæ* contra annumerantur, quæ progrediuntur a causâ ad effectum, a mediis ad finem, etc.

Utraque methodus in omni ferè disciplinâ usurpatur; sed *Analytica* præcipuè in inventione, *Synthetica* in docendo; ex. gr. In arte Logicâ methodus *Analytica* incipit a fine, qui est cognitio; inde procedit ad media, quæ sunt variæ species syllogismorum; hos resolvit in partes proximas scil. propositiones; et has in partes suas, scil. terminos. *Methodus* verò *Synthetica* incipit a termino; cujus naturâ per-

spectâ, procedit ad propositiones quæ ex iis efficiuntur; inde ad syllogismos, quibus acquiritur finis.

Utraque dividi potest in totalem et partialem. *Totalis* est quâ investigatur, vel docetur tota quædam ars seu scientia; ut in exemplo allato. *Partialis*, quâ investigatur, vel docetur pars quædam artis seu scientiæ; ex. gr.

In eadem arte, methodus Analytica incipit ab individuo, quod ob majorem comprehensionem, est res magis composita; inde procedit ad proximè simplicius, scil. speciem infimam; et inde per species subalternas ad genus summum. Synthetica verò incipit a genere summo, et procedit per species, quæ sunt notiones magis compositæ, donec perveniat ad individuum. Priori methodo investigatur, posteriori communicatur, doctrina prædicabilium.

CHAP. XII.

To what we have hitherto delivered, something is generally added about method. *Method* is the art of rightly disposing a series of thoughts upon the same subject.

In all method we must proceed from the things better known to things less known; and therefore, according as the things compounded or their component parts are better known, there are two species of method, the *analytic* and *synthetic*. The *analytic* method is that which proceeds from the things compounded to their component parts. The *synthetic*, that which proceeds from the component parts to the things compounded.

Under the analytic are classed the methods, which proceed from the effect to the cause, from the end, to the means, &c. On the other hand, to the synthetic are referred those, which proceed from the cause to the effect, from the means to the end, &c.¹

Both methods are employed in almost every branch of learning; but the analytic principally in invention, the synthetic in teaching. E. gr. In the art of logic, the analytic method begins from the end, which is knowledge; thence proceeds to the means, which are the various species of syllogisms; and resolves these into their immediate parts, viz. propositions; and these again into their parts, viz. terms. But the synthetic method begins from terms; and, after observing their nature, proceeds to propositions which are made up of them; and thence to syllogisms, by which the end is acquired.

Each kind of method may be divided into *total* and *partial*. The *total* method is that, by which any entire art or science is investigated or taught; as in the adduced example. The *partial* is that, by which some part of an art or science is investigated or taught. E. gr.

In the same art of logic, the analytic method begins with the individual, which (on account of its greater comprehension) is the thing more compounded; thence it proceeds to the next simpler thing, viz. the species infima; and thence through the subalternate species to the summum genus. But the synthetic method begins with the summum genus, and proceeds through the species, which are notions more compound, till it arrive at the individual. The doctrine of predicables is investigated by the former method; and communicated by the latter.

COMMENTARY.—CHAP. XII.

THERE are four instruments, which the art of Logic is considered as forming and directing, for the discovery and communication of truth, viz. *definition*, *division*, *syllogism*, and *method*. The other matters treated of in Logic are considered, as but subservient to the formation and use of these.

We have treated of the three first; and now proceed to say a few words on the fourth, which would deserve to be more largely handled.

By *method* we mean the due disposition of a series of thoughts on the same subject. And here we exclude the method used by poets and orators, considering only that which is employed about some art or science, (or about some branch of either,) and which has truth for its end.

The general laws of method may be said to be, 1. that it ought to be clear, and therefore the connexion of the several parts distinctly marked, and nothing introduced in one part, which would have a more proper place in another: 2. that the parts should be so arranged, that each preceding part should contribute to the right understanding of the subsequent.

Method is divided into two kinds—*analytic*, or the method of *resolution*,—and *synthetic*, or the method of *composition*: the former more frequently used in the discovery of truth; the latter, in the communication of it to others.

The analytic method is considered as proceeding from the things compounded, to their component parts: the synthetic, from the component parts to the things compounded. And here, *effects* produced, *ends* designed, &c. are considered as the things compounded: the *causes*, by which the effects are produced, the *means* by which the ends are attained, &c. as the component parts. So that, if we proceed from the effect to its causes, from the end to its means, &c. we are said to use the analytic method: the synthetic, if we proceed from the causes to the effect, from the means to the end, &c.

One or the other kind of method ought to be employed, according as either is best adapted to promote the object we have in view,—to discover some truth, at present unknown to ourselves,—or to communicate some truth unknown to others.

Thus, the ancients made little or no progress in physical inquiries, because they proceeded in a wrong method; attempting to ascend from causes to effects, by the synthetic method; instead of commencing with the effects, or natural phænomena observed, (as the things with which we are best acquainted,) and so proceeding to the causes, or general laws by which these effects are produced. After we have succeeded in discovering those causes, we may then indeed

invert our course; and, in communicating our discoveries, show by the synthetic method, that the natural causes we assign are adequate to produce, or account for, the various effects or phænomena we observe.

[NOTES—PART III.—CHAP. XII. :—

1. THE analytic method is, generally speaking, the better suited for introducing any science in the plainest and most interesting form; the synthetical, the more compendious form for storing it up in the memory.

QUESTIONS :—

What are the four logical instruments?—What is method?—What are the laws of method?—How do we proceed in method?—How many kinds of method?—Name them?—When are the analytic and synthetic methods used?—What instances are there of the analytic method in the art of logic?—What of the synthetic?—How are these subdivided?—What do you mean by total method?—What partial?—What instance is there in logic of partial method both in analytic and synthetic?—By which of these is the doctrine of the predicables investigated?—By which of them communicated?—Is *analysis* limited to a process from compounds to component parts?]

APPENDIX.

THE conclusiveness of the different legitimate modes of simple syllogisms has been shown in c. 5, p. 3. from the rules *de omni* and *de nullo*. That this property cannot belong to any of the other modes, might be shown by different methods. I select the following as perhaps the briefest.

The conclusion of a syllogism must be either A, E, I, or O. Let us consider, in each of these cases, what premises can warrant the conclusion, according to the rules *de omni* and *de nullo*.

1. Let the conclusion of a simple syllogism be A. In order to warrant this conclusion, that the major term is to be affirmed of the whole minor,—the premises must be such, as to show the major term affirmed universally of the middle, and the whole minor contained in the middle: i. e. the premises must be AA, and the syllogism in the first figure.

2. Let the conclusion be E. In order to warrant this conclusion,—that the major term is to be denied of the whole minor, or the minor term of the whole major,—the premises must be such, as to show one of the extremes universally denied of the middle term, or v. v., and the whole of the other extreme contained in the middle: i. e. one of the premises must be A, and the middle term its predicate; and the other premiss must be E. Hence in the second figure, where the middle term is the predicate of both premises, EAE, and AEE, are both conclusive; but neither of them in the third, because the middle term is not the predicate of either premiss. Hence also EAE is conclusive in the first figure, but AEE is not; and v. v. in the fourth.

3. Let the conclusion be I. In order to warrant this conclusion,—that the major term is to be affirmed of part of the minor, or the minor term of part of the major,—the premises must be such, as to show one of the extremes universally affirmed of the middle term, and part of the other extreme

contained in the middle, or part of the middle term in it: i. e. one of the premises must be A, and the middle term its subject; and the other must be I or A. Hence in the third figure, where the middle term is the subject of both the premises, AII and IAI (as well as AAI) are both conclusive, because the middle term is not the subject of either premiss. Hence also, in the first figure AAI will be conclusive, but IAI not; and v. v. in the fourth.

4. Let the conclusion be O. In order to warrant this conclusion—that the major term is to be denied of part of the minor—if the premises be not such as to warrant the conclusion E, they must be such, as to show the major term universally denied of the middle, or the middle term of the major, and part of the minor term contained in the middle, or part of the middle term in the minor. Hence EIO and EAO will be conclusive in all the figures, (while in the first and second the latter would be useless;) but IEO cannot be conclusive in any. In the second figure also, AOO is transformable into EIO; and in the third, OAO into IAI.

Thus we have shown, that all the modes, whose conclusiveness can be inferred from the rules *de omni* and *de nullo*, and which are of any use, are—1. AAA in the first figure,—2. AEE in the second and fourth,—3. EAE in the first and second,—4. AII in the first and third,—5. IAI in the third and fourth,—or 6. AAI in the same,—7. EIO in all the figures,—or 8. EAO in the third and fourth,—9. AOO in the second, which is there synonymous with EIO,—and 10. OAO in the third, being there synonymous with IAI. So that, rejecting the modes which are really different, and in which the premises are needlessly strong, we might say that there are but six conclusive and useful modes, and thirteen varieties of simple syllogisms, viz. in the first figure, AAA, EAE, AII, and EIO: in the second figure, AEE, EAE, and EIO; in the third figure, AII, IAI, and EIO; in the fourth figure, AEE, IEL, and AIO.

I do not mean, that the younger students should trouble themselves with the preceding argument: nor with the following observations, until they have read Mr. LOCKE's Essay on the Human Understanding.

Mr. Locke's principal arguments, against the usefulness of the doctrine of syllogisms, may be reduced to the following heads:—1. that it does not assist the mind at all; in the

most important part of the process of reasoning, namely, the finding out of proofs:—2. that in that part of the process of reasoning to which alone it can be applied, namely, showing the connection of the proofs, it is not the best method of reasoning:—3. that it can have none of that peculiar use, which was attributed to it, in detecting the fallacies of other forms of argument, as fallacies may be couched in syllogisms themselves.

Under these several objections, I shall notice some others that are subordinate: and I would premise that Mr. LOCKE's whole argument upon the subject is verbose, diffusive, and declamatory; much deficient in that clearness and precision of statement, which a greater acquaintance with Aristotle's Logic might have promoted in his writings. That his acquaintance with it was very superficial, appears from one gross mistake, that he makes about the meaning of that rule in the doctrine of syllogisms, which declares that no conclusion can follow from two particular premises. At this Mr. Locke exclaims as a "manifest mistake;" while it is manifest, from his observations on it, that he confounds *particular* propositions with *singular*. But let us now examine each of the three arguments above-mentioned.

On the first, he says that syllogism fails our reason in the part, which, "if not its highest perfection, is yet certainly "its hardest task, and that which we most need its help in; "and that is, *finding out proofs and making new discoveries*. "Syllogism comes after knowledge, and then a man has little "or no need of it." Again—"In neither case is it syllogism "that discovered those ideas, or showed the connexion; for "they must be both found out, and the connexion every "where perceived, before they can rationally be made use "of in syllogism. A man must see the connexion of each "intermediate idea with those that it connects, before he can "with reason make use of it in a syllogism," &c. &c.

Now just before, Mr. Locke has been recommending another form of argument, as better than the syllogistic. But would he pretend to intimate, that his favourite form of argument can assist us in that, in which he truly observes that syllogism, by itself, can do nothing? Or would he consider it as a reasonable objection to that form of argument, which he recommends, that it cannot do that, *which no form of argument can do*? Certainly not. It appears then that

this objection, which he brings forward in various shapes against syllogism, has not the smallest weight:—that, allowing all his premises in the fullest extent, it does not follow at all that syllogism is not the very best possible form of argument: inasmuch as, if any other be proposed as better, all the same objections must lie against it, which he here puts forward against syllogism.

With respect to the discovery of proofs, nothing (as I have before intimated) can supply the want of information on the subject about which we reason, or the want of natural sagacity. Yet our information and sagacity may be used to much better purpose, by the application of some aids, which Aristotle's Logic presented. And among them I reckon the doctrine of *Topics*, as one which has passed into very unwarrantable neglect.

When Mr. Locke says—"I am apt to think, that he who "should employ all the force of his reason only in brandishing of syllogisms, will discover very little of that mass "of knowledge which lies yet concealed in the secret recesses "of nature;"—he expresses himself with needless caution. Such a man will certainly not discover any of it. And if any imagined, that the mere *brandishing of syllogisms* could increase their knowledge, (as some of the schoolmen seemed to think,) they were indeed very absurd. But the admission of the absurdity of their abuse of Aristotle's Logic, impeaches not at all the use, which may truly be attributed to it. And I am not afraid to assert, that whenever the principal parts of the old Logic shall be combined with the real improvements in the new, and a practical illustration given of their application to the different subjects on which the reasoning powers of man are employed; a better book than Mr. Locke's will be produced, and the learned world will receive a useful accession to its stock. Do any smile at me, as a pedant?—I smile too.

On the second argument, Mr. Locke observes that, in showing the connexion of the proofs, Syllogism "is of no "great use, since the mind can perceive such connexion, "where it really is, as easily, nay perhaps better, without "it." "We may take notice that there are many men, that "reason exceeding clear and rightly, who know not how to "make a Syllogism." And after arranging a number of terms *in the order which they would hold in a Sorites*, he asks,—

"whether the connexion of the extremes be not more clearly seen, in this simple and natural disposition, than in the perplexed repetitions and jumble of five or six Syllogisms?" And again—"Would not the position of the *medius terminus* be more natural, and show the agreement or disagreement of the extremes clearer and better, if it were placed in the middle between them? which might easily be done, by transposing the premises"—i. e. of syllogisms in the first figure.

I shall take no notice here of the observation, that men reason sufficiently well, who know not how to make a syllogism; having considered that objection in the Introduction. Waving this, Mr. Locke now appears to bring forward two objections against Syllogism:—1. the unnatural arrangement of the terms;—2. their unnecessary repetition.

As to the first, Mr. Locke seems to have been imposed on by the sound of the expression—*middle* term: otherwise it is hard to conjecture, why he thinks it a clearer arrangement to say—*Some men are destitute of reason—No being destitute of reason is accountable—Therefore, Some men are not accountable*, according to the arrangement in a Sorites; than if I express the same argument according to the Syllogistic arrangement, putting the second of these premises first. It is a point not worth disputing. Yet Mr. Locke seems to attribute to it so much importance, that while he admits the argument will be clear in his arrangement of it, he appears in one place to question, whether in the other arrangement, "any but those who have thoroughly studied mode and figure," can be sure, "that the conclusion certainly follows from the premises."—Wonderful, if this be so, is the magic power of Syllogism; that by a touch can render the plainest argument invisible to all—but the Logician's eye!

But 2ndly, Mr. Locke objects to the unnecessary repetition of the terms in a Syllogism, and would rather have the shorter method, employed in an Enthymeme, or Sorites. And on this head, he takes notice of the *haste* which the mind makes to draw its conclusion, &c. Very true. But, if I may borrow an expression from a vulgar proverb, some would make *better speed*, if they made less *haste*. Though a Sorites be a *shorter* argument than the Syllogisms into which it may be resolved, yet the force of every proposition in the latter is essential to the *vis consequentiæ* in the former; and

it may be far from *unnecessary* to repeat them all, in order to submit the argument to a strict examination.

I readily grant, that the connexion of both extremes with the middle term is often so plain, that the mere mention of one premiss will be sufficient to intimate the other: and that in matters of common discourse,—(such as that case, which Mr. Locke supposes, of an old lady reasoning upon the danger of going out, in bad weather, after a fever)—a man would be truly ridiculous, who should express himself in syllogisms: not less so than the man, who, having learned to sing, should never speak but in *recitative*. But if Mr. Locke would admit that there is ever such a thing, as an argument, which needs to be *fully* stated, in order to lay the *whole* proof before the view; he could not reasonably object to the repetition of the terms in a Syllogism, as unnecessary prolixity.

But we come now to the last point of his attack. “Of whatever use” (says Mr. Locke) “mode and figure is pretended to be, in the laying open of fallacy,—those scholastic forms of discourse are not less liable to fallacies, than the plainer ways of argumentation.” Again—“If it be certain that fallacies can be couched in Syllogism, as it cannot be denied, it must be something else, and not Syllogism, that must discover them.”

With Mr. Locke's leave, I shall put this argument in Syllogistic form, in order to examine it: and it will run thus. “*Whatever is itself liable to fallacy can have no peculiar use in detecting fallacy. But Syllogism is itself subject to fallacy:*” Therefore, &c. &c. Now the minor is indubitable; and the *vis consequentiæ* is immediately evident. Let me then examine the major. I pause. Is this universally true? Nay, if so, everything being subject to perversion and error, nothing can be of use in detecting error. Tell a carpenter, when he employs his rule or square for examining the correctness of his work, that he may as well burn these instruments, because they may be warped,—they may become incorrect themselves: and the carpenter will answer Mr. Locke's argument.

But again—Mr. Locke asserts that in detecting fallacies, “Syllogism shows the incoherence only to those, (who are not one of ten thousand) who perfectly understand mode and figure, and the reason upon which those forms are estab-

lished." This assertion must mean, either—1. that none but those who are acquainted with Aristotle's Logic can perceive the fallacy, when exposed syllogistically by another,—in which sense the assertion is false and absurd (as I have before observed): or 2. that none but those, who are acquainted with the doctrine of Syllogisms, can employ it for the purpose of examining and detecting fallacies. And in this sense, the assertion is indeed undeniably true; but contains not the shadow of a reasonable objection against the usefulness of the art. It may with equal truth be asserted of anything else, the knowledge of which is most confessedly useful, that no one who is destitute of the knowledge can turn it to a useful purpose.

Whether Mr. Locke was serious in advancing the following argument, I am not certain.—“If Syllogism were the only, or so much as the surest way, to detect the fallacies of artificial discourses, I do not think that princes, in matters that concern their crowns and dignities,—who were often to pay for their mistakes with their heads or fortunes,—would every where have neglected to bring Syllogism into the debates of moment: a plain evidence to me that those scholastic forms are of little use to discover truth or fallacy, whilst both one and the other might be shown, and better shown, without them.”

One can but smile at the supposition, that *arguments* are the most powerful weapons of princes; or that it is for a merely theoretical *mistake*, they ever pay with their heads or fortunes. Yet perhaps it would be found that some, who have managed debates of the highest national moment, have been qualified by an acquaintance with that art, which Mr. Locke so much decries, for bringing forward luminous statements and convincing arguments; as well as for exposing the weakness and fallacy of those by which they were opposed.

But Mr. Locke seems throughout to imagine, that no use can be made of the doctrine of Syllogism, unless by men who deliver their reasonings in syllogistic form. That would indeed justly expose a man to the imputation of disgusting pedantry and tediousness. But in fact, he who never uses an expression, borrowed from the Aristotelic Logic, may yet, unobserved, be availing himself in the most important manner, of its use; by bringing definitions, divisions, and arguments to the test of its rules.

In the mere application of it, to the examining of an argument, which we desire to refute, the Logician will be able at once to bring the argument, in his own mind, to syllogistic form. (Mr. Locke himself says—"I readily own that "all right reasoning may be reduced to Aristotle's forms of "Syllogism.") He will then have before his view every constituent part of the argument; some of which may have been wholly suppressed by his antagonist, and others disguised by ambiguity and declamation. He knows every point in which it is subject to examination. He perceives immediately, by the rules of his art, whether the premises may be acknowledged, and the conclusion denied, for want of a *vis consequentiæ*. If not, he knows where to look for a weakness. He turns to each of the premises, and considers whether they are false, dubious, or equivocal: and is thus prepared and directed to expose every weak point in the argument, with clearness, precision, and method; and this, to those who, perhaps, are wholly ignorant of the aids by which the speaker is thus enabled to carry conviction with his discourse.

Indeed any one who considers what is admitted in Mr. Locke's acknowledgment, that all right reasoning may be reduced to one of four general *formulae*—subject to the strictest rules, and who considers also what a variety of forms men employ in reasoning; so far as he is sensible of the importance of *right reasoning* at all, cannot rationally deny the usefulness of an acquaintance with those *formulae*, and the rules to which they are subject.

I have often thought it strange, that students, in the first part of their academic course, should be laboriously employed in learning an art, which—in a subsequent period of their course—they are taught to undervalue as useless. Perhaps this, combined with the superficial and imperfect manner in which they too often learn the Aristotelic Logic,—the *first* study they are introduced to in the University,—has had a more unfavourable tendency on their own minds than many are aware. However this be, I trust the preceding discussion will not be unacceptable to those who value truth more than the name of Mr. Locke.

P R A X I S,

COLLECTED BY AN EX-SCHOLAR OF T.C.D.

Supply the suppressed premiss in the following. (Wolf's Prolegomena.)

I. It is clear that the poems of Homer were written in detached pieces, and not in one continuous whole, for the writers of the Cyclic poems, who succeeded Homer, wrote also in detached pieces.

II. The Art of Writing was unknown to Homer, for he does not mention such an art.

Shew the fallacy of the following :

III. There existed successful imitators of Homer's poetry, for several passages contained in his poems are now universally rejected as interpolations.

IV. The digamma could not have been originally used in Homeric poetry, for ancient grammarians are silent upon the subject. [Supply the omitted premiss.]

Form the following into Syllogisms :

The star twinkles, and is consequently fixed :

Thou bearest witness of thyself, (therefore) thy witness is not true. (John viii. 13.)

Shew the irregularity or fault of the following Syllogisms :

An enslaved people is not happy :

The English are not enslaved :

∴ The English are happy.

All diamonds consist of carbon :

All carbon is inflammable :

∴ Some diamonds are inflammable.

Turn into Syllogisms the following :

Possunt, quia posse videntur.

That cow has had a calf, for she yields milk :
 We shall hear thunder, for there is a flash of lightning :
 The Saviour could not be an imposter, for he warned
 his disciples to expect persecution.

Show the fallacy of the following disjunctive :

The cause of the sufferings of infants must be either

1. Sins before birth :
 2. A want of power
 3. A want of justice
 4. Original sin.
- } in their Creator, or
- It cannot be either 1, 2, or 3 ;
 It must therefore be 4.

Supply the conclusion in the following dilemma :

If Æschines joined in the public rejoicings, he is inconsistent : if he did not, he is unpatriotic.
 Either he did, or did not :
 Therefore, &c.

Supply the requisite premiss in this :

A person who is able to endure pain, will be likely to utter falsehood under torture ; he will be equally so, who is not able :
 A person therefore under torture will be likely to utter falsehood.—*Quintilian.*

Determine whether the following fallacies are verbal or material :

Events recorded in the Chinese annals have really happened :
 Such an eclipse is found in the Chinese annals :
 ∴ Such an eclipse really happened.

None but whites are civilized :
 The ancient Germans were white :
 ∴ The ancient Germans were civilized.

A symptom of plague is fever :
 Such a man has fever :
 Therefore he has the plague.

He that obeys God in all things is innocent :
 Titius obeys God in some things :
 ∴ Titius is innocent.

If I denied the existence of God, I should be impious :
 I do not deny the existence of God :
 I am not therefore impious.

Shew the fallacy of the following Enthymemes :

Ireland is distressed, therefore it is misgoverned.
 The soul has a contrariety to death, therefore it is immortal :
 Nature abhors a vacuum, therefore water rises in a pump :
 I think therefore I am.

What logical rules are violated by the following Sophisms ?
 (*Gray's Logic*, p. 141.)

Methodists are Christians :
 Quakers are Christians :
 ∴ Quakers are Methodists.

Hector slew Patroclus :
 Achilles slew Hector :
 ∴ Achilles slew Patroclus.

Meat and drink are necessities of life :
 The revenues of Vitellius were spent on meat and drink :
 ∴ The revenues of Vitellius were spent on the necessities of life.

He who calls you a fool speaks truly :
 He who calls you a fool calls you a man :
 ∴ He who calls you a man speaks truly.

What I am, you are not :
 I am a man :
 ∴ You are not a man.

He who is most hungry eats most :
 He who eats least is most hungry :
 ∴ He who eats least eats most.

Some of the learned are prejudiced, and consequently have not powerful minds.

Innate ideas cannot be enumerated, and consequently cannot exist.—*Locke.*

Show the fault in the following apparent syllogisms.
(*Gray's Logic*, p. 50.)

I.

Every rational agent is accountable :

Brutes are not rational agents :

∴ Brutes are not accountable.

II.

The innocent should be protected from punishment :

This person should be protected from punishment :

This person is therefore innocent.

III.

No evil should be allowed that good may come of it :

All punishment is an evil :

∴ No punishment should be allowed that good may come of it.

IV.

All who fight bravely deserve reward ;

Some soldiers fight bravely ;

Soldiers therefore deserve reward.

In what mode and figure are the following :

The appointments of nature are invariable ;

The principles of justice are variable ;

∴ The principles of justice are no appointments of nature.

A just governor will distinguish between the upright and the evil ;

God is a just governor :

God will therefore distinguish between the upright and the evil.

Matter has not intelligence ;
 The mind has intelligence ;
 ∴ Mind is not matter.

Turn into Syllogisms the following :

The Epicureans cannot be regarded as true philosophers, for they did not consider virtue to be a good in itself.

As we see in the case of Parr, great scholars have sometimes strange peculiarities.

Dreams which appear to comprise the events of hours, may yet occupy no more than a minute : for persons who have been asleep only a minute, have been known to have such dreams.—(*Brougham.*)

Resolve into Syllogisms the following Sorites :

Onesimus was a servant of Philemon ;
 Philemon was a hearer of Archippus ;
 Archippus was a minister of Colosse ;
 Onesimus was therefore a resident at Colosse.

Place in their proper Soritic order, the following propositions, and show which of them are logically faulty : and why ?

The Scriptures are confessedly agreeable to truth :
 The Church of England is conformable to the Scriptures.

A. B. is a divine of the Church of England :
 This opinion is in A. B's. sentiments :
 This opinion may be presumed to be true.

Animal food may be dispensed with (as by the Brahmins).
 Vegetable food may be (as is plain from the example of the Esquimaux.)

All food consists of animal or vegetable food :
 ∴ All food may be dispensed with.

The child of Themistocles governed his mother :
 The mother governed Themistocles :
 Themistocles governed Athens :
 Athens governed Greece :
 Greece governed the world :
 ∴ The child of Themistocles governed the world.

- * If the hour hand of a clock be any distance, (suppose a foot) before the minute hand, this last, though moving twelve times faster, can never overtake the other; for while the minute hand is moving over those twelve inches, the hour hand will have moved over one inch: so that they will then be an inch apart; and while the minute hand is moving over that one inch, the hour hand will have moved over $\frac{1}{12}$ inch, so that it will be still ahead; and again, while the minute hand is passing over the space of $\frac{1}{12}$ inch, the hour hand will pass over $\frac{1}{144}$ inch; so that it will be still ahead: and this, it is plain, may go on for ever:

The minute hand can therefore never overtake the hour hand.

The divine law bids us obey secular magistrates:

Bishops are not secular magistrates:

∴ The divine law does not bid us obey bishops.

No man can serve God and Mammon:

The spendthrift does not serve Mammon:

He therefore serves God.

* "Not quite consistently, we think, with his repeated statement that all arguments are but varieties of the syllogism, Archbishop Whateley denies the possibility of exhibiting the above apparent-argument in a syllogistic form. To us it appears plainly a condensed syllogism in 'Barbara,' the major and minor premiss of which will run in somewhat the following manner:

"Of any two moving bodies, having different velocities, if the slower body shall be any distance in advance of the more rapid one, it will be impossible for the latter to overtake the former: for &c. &c.

The hour and minute hand of a clock are two such bodies:
Therefore, &c."

J. S. Mill (*System of Logic*, vol. ii.) refers the fallacy to the class of those which are occasioned by ambiguous language, conceiving the difficulty to lie in the words 'for ever.' He accordingly dilates on the difference between 'any length of time' and 'any number of subdivisions of time,' between what is 'infinite' and what is 'infinitely divisible,' fortifying his solution with the authority of Hobbes. But this refinement seems to us beside the mark. In the reasoning of the example there is a plain 'petitio principii,' viz. that the unit of movement of the quicker body may become an *infinitesimal* quantity, whereas it is clearly a *fixed* one. The fallacy is therefore of the 'extra dictionem' or *material* kind."—*Gray's Logic*.

All the miracles of Jesus would fill more books than the world could contain :

The things related by the evangelists are the miracles of Jesus :

∴ The things related by the evangelists would fill more books than the world could contain.

We ought to believe Scripture :

Tradition is not Scripture :

∴ We ought not to believe tradition.

If Judas was not rightly made an apostle, he deserved rejection :

He was rightly made an apostle :

∴ He did not deserve rejection.

If Abraham was justified, it must have been either by faith or by works :

He was not justified by faith (according to James,) nor by works (according to Paul :)

Abraham therefore was not justified.

Supply the premiss in the following :

It is a mistake into which none but narrow minds can fall, to speak lightly of an acquaintance with the accuracies of Grammar and Etymology, or profess to find the study of the classics useful only for the matter they contain. I am persuaded that to such persons a great part of the value of the classics, as instruments of education, is lost—for surely it is better to think *as* the ancients thought, rather than to know *what* they thought.

The higher we proceed in our analysis of the Grecian language, the harder and rougher does its nature appear to be: the Theory therefore of Hemsterhuis is untenable.

The Pope must be inspired, for he is infallible.

The monks must have been a diligent and industrious class of men, for to them we owe the preservation of classical literature.

Put in Syllogistic form:

The Epicurean deities are without happiness, since they have no action and consequently no virtue.

ON MATERIAL FALLACIES.

(Gray's *Logic*, pp. 113.—116.)

THE two principal material fallacies which require notice are those which are termed by Aristotle 'ignoratio elenchi,' and 'petitio principii.' The former has been happily *generalised by Whateley into the fallacy of *irrelevant conclusion*, and is committed, whenever the premises adduced prove not the point in dispute, but one resembling it, and likely to be mistaken for it. In illustration of this, it has been well remarked, that a reasoner,† "instead of proving 'that a prisoner has committed an atrocious fraud,' will prove 'that the fraud he is accused of is atrocious;' instead of proving 'that a man has not the right to educate his children in the way he thinks best,' will show 'that the way in which he educates them is not the best;' instead of proving 'that the poor ought to be relieved in this way rather than in that,' will prove 'that the poor ought to be relieved, &c. &c.'" The reasoner then proceeds to assume as premises, conclusions different from those which have really been established.

The fallacy 'petitio principii' answers very much to what is popularly called in English 'begging the question.' It is the fallacy which is committed whenever either of the pre-

* *Elenchus* properly signifies the contradictory of an opponent's position, which is, of course, in disputation the thing to be proved; but the supposition of an opponent and a disputation is needlessly circuitous, and savours a little too much of the times when Logic was considered as an 'art of wrangling.' It is every way preferable to examine the conclusiveness of an argument in itself. The fallacy now before us is of very frequent occurrence, being the one which is complained of whenever the remark (so often heard in conversation) is made, 'that is not the question.' It is evident, however, that this fallacy can only be exemplified by a previous stating, in each instance, what the question is; and for this reason no separate exercises on it have been given in the present chapter. One very common case of it, that, sc. in which a universal conclusion is substituted for a particular, and a contradiction faulty in quantity thus made, belongs rather to the class of *verbal* fallacies.

† This and the following sentence are taken, in substance, from a little work entitled 'Easy Lessons in Reasoning,' (pp. 138, 139,) which, though anonymous, is commonly attributed, not without good *apparent reason*, to the eminent writer already named.

mises on which a conclusion rests is unduly assumed. This undue assumption may take place in several ways. Sometimes the premiss which is employed is substantially identical with the conclusion, the terms in which it is expressed being only so varied as to conceal the sameness. Great facility is afforded to this disguise in English, by the mixed derivation of the language, and the number of interchangeable terms which it consequently affords. Thus it is assigned as a reason by a writer of some merit why *reputation* is desirable that it procures us *esteem*. Sometimes the only difference between the conclusion and premiss will be, that a truth is expressed in *popular* phraseology in the one, and in *philosophical* in the other. A fact has in this manner often been assigned as a *cause for itself, as when, e.g. the magnet's drawing iron to itself has been ascribed to its *attractive* properties. Sometimes the premiss used will be absolutely unauthorised and without evidence, not to say false, as in the instance quoted in a previous chapter, of the authenticity of the Chinese annals. Lastly, a premiss is sometimes made dependent for its evidence on the conclusion, and the conclusion and premiss are thus proved alternately from each other. This is technically called arguing in a circle, and the larger the circle, the more difficult is it of detection. We may exhibit this fallacy by means of symbols. A reasoner will perhaps prove that A is B, because C is D, and that C is D, because E is F, and so on,—finally proving the last premiss, say, that M is N, because A is B. The most notable instance of this procedure is that of the Romanists, who first prove the Scripture to be the Word of God, by the infallible testimony of their church, and then, when evidence is called for of the infallible authority of their church, proceed to prove it by the Scripture. †This

* Taken in this view, the present fallacy will be seen evidently to include that of 'non causa pro causa,' the intermediate one in Aristotle's list of material fallacies, as exhibited in a previous chapter. The fallacy of 'non causa' is sometimes subdivided into the two species of 'non vera pro vera' and 'non talis pro tali,' the former being equivalent to the falsity of a *major* premiss, the latter of a *minor*; but the truth and falsity of propositions being matters of opinion, it is plain that no exercise on this branch of the subject could be usefully given.

† The absurdity of a circle is not confined to argument; it may

absurdity is the same, as if, of two correlative terms, we should make each in turn the other.

attach equally to *definition*; in short, it is committed whenever two correlates are made alternately to represent each other. It is accordingly justly remarked by Mackintosh (*Ethical Philosophy*, page 212) that the moralist who should first explain the criterion of right actions to be that they are approved and commanded by conscience, and afterwards define conscience to be the faculty which approves and commands right actions, would be treading a vicious circle. In the following anecdote, given from Campbell, (*Eccles. History*, p. 384, ed 1824,) an explanation and thing explained will be seen thus to reciprocate.

"Implicit faith has been sometimes ludicrously styled '*fides carbo-naria*' from the noted story of one who, examining an ignorant collier on his religious principles, asked him what it was that he believed. He answered 'I believe what the church believes.' The other rejoined 'What then does the church believe?' He replied readily, 'The church believes what I believe.' The other, desirous, if possible, to bring him to particulars, once more resumed his inquiry. 'Tell me then I pray you, what it is that you and the church both believe?' The only answer the collier could give was, 'Why, truly, Sir, the church and I both believe the same thing.'"

FINIS.



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